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* * * * * STN Columbus * * * * *
FILE 'HOME' ENTERED AT 10:00:56 ON 17 AUG 93

	SINCE FILE	TOTAL
	ENTRY	SESSION
=> file reg		
COST IN U.S. DOLLARS		
FULL ESTIMATED COST	0.27	0.27

FILE 'REGISTRY' ENTERED AT 10:01:03 ON 17 AUG 93
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STRUCTURE FILE UPDATES: 14 AUG 93 HIGHEST RN 149341-00-4
DICTIONARY FILE UPDATES: 16 AUG 93 HIGHEST RN 149341-00-4

=> s teos/cn
L1 1 TEOS/CN

=> s silicon oxide/cn
L2 2 SILICON OXIDE/CN

	SINCE FILE	TOTAL
	ENTRY	SESSION
=> file ca		
COST IN U.S. DOLLARS		
FULL ESTIMATED COST	6.11	6.38

FILE 'CA' ENTERED AT 10:01:31 ON 17 AUG 93
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FILE COVERS 1967 - 7 Aug 93 (930807/ED) VOL 119 ISS 6.
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abstract graphic structures. The AB format DOES NOT display structure
diagrams.

=> s (light? or uv or u(w)v or ultraviolet? or photo? or laser? or excimer?)/bi,
150515 LIGHT?/BI
318312 LIGHT?/AB
91983 UV/BI
155607 UV/AB
25962 U/BI

117455 U/AB
 57695 V/BI
 396835 V/AB
 1928 U(W)V
 99299 ULTRAVIOLET?/BI
 597 ULTRAVIOLET?/AB
 450634 PHOTO?/BI
 436626 PHOTO?/AB
 173541 LASER?/BI
 172766 LASER?/AB
 6366 EXCIMER?/BI
 8308 EXCIMER?/AB
 L3 1133243 (LIGHT? OR UV OR U(W)V OR ULTRAVIOLET? OR PHOTO? OR LASER?
 OR EXCIMER?)/BI,AB

=> s (microwave? or plasma? or rf or dc or electrode:)/bi,ab and 13

27210 MICROWAVE?/BI
 27463 MICROWAVE?/AB
 236390 PLASMA?/BI
 324495 PLASMA?/AB
 4647 RF/BI
 19849 RF/AB
 2943 DC/BI
 19219 DC/AB
 92488 ELECTRODE:/BI
 (ELECTRODE/BI)
 134317 ELECTRODE:/AB
 (ELECTRODE/AB)

L4 70680 (MICROWAVE? OR PLASMA? OR RF OR DC OR ELECTRODE:)/BI,AB AN
 D L3

=> s (c(w)v(w)d or cvd or deposit? or coat?)/bi,ab and 14

161298 C/BI
 1024939 C/AB
 57695 V/BI
 396835 V/AB
 216625 D/BI
 838329 D/AB
 57 C(W)V(W)D
 5659 CVD/BI
 6302 CVD/AB
 150476 DEPOSIT?/BI
 258495 DEPOSIT?/AB
 308559 COAT?/BI
 360417 COAT?/AB

L5 12037 (C(W)V(W)D OR CVD OR DEPOSIT? OR COAT?)/BI,AB AND L4

=> d his

(FILE 'HOME' ENTERED AT 10:00:56 ON 17 AUG 93)

FILE 'REGISTRY' ENTERED AT 10:01:03 ON 17 AUG 93

L1 1 S TEOS/CN
 L2 2 S SILICON OXIDE/CN

FILE 'CA' ENTERED AT 10:01:31 ON 17 AUG 93

L3 1133243 S (LIGHT? OR UV OR U(W)V OR ULTRAVIOLET? OR PHOTO? OR LAS
 L4 70680 S (MICROWAVE? OR PLASMA? OR RF OR DC OR ELECTRODE:)/BI,AB
 L5 12037 S (C(W)V(W)D OR CVD OR DEPOSIT? OR COAT?)/BI,AB AND L4

=> s 15 and 12
101371 L2
L6 793 L5 AND L2

=> s 11 and 16
3896 L1
L7 10 L1 AND L6

=> d ti 1-10

L7 ANSWER 1 OF 10 COPYRIGHT 1993 ACS
TI Manufacture of semiconductor device

L7 ANSWER 2 OF 10 COPYRIGHT 1993 ACS
TI Particle formation in ***plasma*** -enhanced
tetraethylorthosilicate chemical vapor ***deposition***

L7 ANSWER 3 OF 10 COPYRIGHT 1993 ACS
TI Method and apparatus for preparation of circuit board substrates

L7 ANSWER 4 OF 10 COPYRIGHT 1993 ACS
TI Planarized ***deposition*** of high-quality silicon dioxide film
by ***photoassisted*** ***plasma*** ***CVD*** at
300.degree.C using tetraethyl orthosilicate

L7 ANSWER 5 OF 10 COPYRIGHT 1993 ACS
TI Low-temperature ***deposition*** of silicon oxide films by
microwave ***plasma*** ***CVD*** of TEOS

L7 ANSWER 6 OF 10 COPYRIGHT 1993 ACS
TI Preparation of insulator films in manufacture of integrated circuits

L7 ANSWER 7 OF 10 COPYRIGHT 1993 ACS
TI Low-temperature polysilicon TFT with two-layer gate insulator using
photo - ***CVD*** and APCVD silicon dioxide

L7 ANSWER 8 OF 10 COPYRIGHT 1993 ACS
TI Experimental application of poly(vinyl alcohol)-silica for small
artificial vessels

L7 ANSWER 9 OF 10 COPYRIGHT 1993 ACS
TI ***Photosensor***

L7 ANSWER 10 OF 10 COPYRIGHT 1993 ACS
TI Producing microstructures on solids

=> d all 1-10

L7 ANSWER 1 OF 10 COPYRIGHT 1993 ACS
AN CA117(20):203162m
TI Manufacture of semiconductor device
AU Enomoto, Yasuyuki
CS Sony K. K.
LO Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
PI JP 04084424 A2 17 Mar 1992 Heisei
AI JP 90-198046 27 Jul 1990
IC ICM H01L021-28
ICS H01L021-28; H01L021-285; H01L021-316; H01L021-3205
SC 76-3 (Electric Phenomena)

DT P
 CO JKXXAF
 PY 1992
 LA Japan
 AB The title method involves forming an amorphous Si film on an Al-based layer of a substrate, ***photoetching*** the Si film and Al-based layer, and carrying out selective ***CVD*** to substitute the Si layer with a high-m.p. metal layer. Alternatively, the method involves forming a 1st Si oxide layer on an Al-based interconnection layer of a substrate by ***plasma*** ***CVD*** using $(\text{EtO})_4\text{Si} + \text{O}_2$, forming a 2nd Si oxide layer by ***CVD*** using $(\text{EtO})_4\text{Si} + \text{O}_3$; etching back the 2nd layer to obtain a planar surface, and forming a ***plasma*** ***CVD*** Si nitride layer. A device having a reliable interconnection and a good passivation is obtained.
 KW interconnection passivation semiconductor device
 IT Semiconductor devices
 (connection formation and passivation of)
 IT Vapor ***deposition*** processes
 (interconnection formation and passivation by, in manuf. of semiconductor devices)
 IT Passivation
 (of semiconductor devices, with silicon oxide and nitride films)
 IT ***78-10-4***, Tetraethoxysilane 7782-44-7, Oxygen, uses 10028-15-6, Ozone, uses
 (***CVD*** of silicon oxide using, in passivation of semiconductor devices)
 IT 7440-21-3, Silicon, uses
 (amorphous films, in formation of interconnections of semiconductor devices)
 IT 7429-90-5P, Aluminum, uses
 (elec. interconnections, formation and passivation of, in manuf. for semiconductor devices)
 IT ***7631-86-9***, Silicon oxide, uses 12033-89-5, Silicon nitride, uses
 (passivation of semiconductor devices with)
 IT 7440-33-7, Tungsten, uses
 (selective ***CVD*** of, in manuf. of semiconductor devices)
 L7 ANSWER 2 OF 10 COPYRIGHT 1993 ACS
 AN CA115(10):104014s
 TI Particle formation in ***plasma*** -enhanced tetraethylorthosilicate chemical vapor ***deposition***
 AU Wu, J. J.; Tinker, M. T.; Miller, R. J.; Wolfe, H. L.; Stein, K. J.; Malinowski, J. C.
 CS T. J. Watson Res. Cent., IBM
 LO Yorktown Heights, NY 10598, USA
 SO Proc. - Electrochem. Soc., 91-5(Proc. Symp. Autom. Integr. Circuits Manuf., 6th, 1990), 347-58
 SC 76-11 (Electric Phenomena)
 SX 66
 DT J
 CO PESODO
 IS 0161-6374
 PY 1991
 LA Eng
 AB The observation is reported of the prodn. of particles ranging in size from smaller than 0.5 .mu.m to tens of microns in a ***plasma*** -enhanced oxide ***deposition*** process, which uses tetraethylorthosilicate (TEOS) vapor as a precursor. Studies of

the morphol. of these particles indicate that the larger particles were formed by aggregation of gas phase nucleated particles of submicron size. Energy dispersive x-ray anal. indicated that the particles contained Si and O. ***Light*** scattering techniques were used to detect the onset of particle generation. A burst of particles was detected when the ***plasma*** was turned on, and was attributed to particle dislodgement from ***electrode*** and/or chamber wall surfaces. Addnl. particle generation during the ***deposition*** was found to increase with time, which was consistent with the nucleation phenomenon.

KW ***plasma*** ***CVD*** ethyl orthosilicate; particle film ethyl orthosilicate

IT Particles

(silica, formation of, in ***plasma*** enhanced ***deposition*** from tetraethylorthosilicate)

IT ***7631-86-9*** , Silica, uses and miscellaneous (film ***deposition*** of, from tetraethylorthosilicate ***plasma*** , particle formation in)

IT ***78-10-4*** , Tetraethylorthosilicate (silica particle formation in ***plasma*** enhanced chem. vapor ***deposition*** from)

L7 ANSWER 8 OF 10 CO RIGHT 1993 ACS
 AN CA106(12):90103v
 TI Experimental application of poly(vinyl alcohol)-silica for small artificial vessels
 AU Tamura, K.; Mizuno, H.; Okada, K.; Katoh, H.; Hitomi, S.; Teramatsu, T.; Shimizu, Y.; Hino, T.
 CS Chest Dis. Res. Inst., Kyoto Univ.
 LO Kyoto 606, Japan
 SO Biomater., Med. Devices, Artif. Organs, Volume Date 1985, 13(3-4), 133-52
 SC 63-7 (Pharmaceuticals)
 DT J
 CO BMDOAI
 IS 0090-5488
 PY 1986
 LA Eng
 AB A poly(vinyl alc.) [9002-89-5]-silica [7631-86-9] (PVA-SiO₂) composite and heparinized PVA-SiO₂ were examd. in vitro and in vivo as materials to ***coat*** artificial vessels to be used to the replacement of small arteries. PVA-SiO₂ prolonged coagulation time and no blood coagulation was noticed on heparinized PVA-SiO₂ surfaces after 2 days using the Lee-White and ***plasma*** recalcification methods. After placing noncoated and ***coated*** surfaces in contact with blood components in vitro and in vivo, the degree of blood component adhesion was greater in noncoated woven Dacron than in PVA-SiO₂ ***coated*** Dacron. The degree of adhesion was even less in heparinized PVA-SiO₂ ***coated*** Dacron. Furthermore, artificial vessels made of these 3 types of materials were used to replace parts of the canine abdominal aorta and were removed 1 1/2 yr later. Patency rates were as follows: noncoated 2/7, PVA-SiO₂- ***coated*** 4/7, heparinized PVA-SiO₂- ***coated*** 8/12. The inner surfaces of these prostheses were obsd. with ***light*** microscopy and SEM. Intima formation was thinner on the PVA-SiO₂ composite surfaces than on the control surfaces. Heparin acted as a local anticoagulant and PVA-SiO₂ limited intima formation. Thus, PVA-SiO₂ composite ***coated*** surfaces can be effective for small artery replacement due to good tissue affinity and anticoagulability.
 KW polyvinyl alc silica prosthetic ***coating*** ; vessel artificial polyvinyl alc silica
 IT Blood platelet
 Fibrins
 (adhesion of, on poly(vinyl alc.)-silica surfaces, prosthetic ***coatings*** in relation to)
 IT Polyester fibers, biological studies
 (for artificial blood vessel, poly(vinyl alc.)-silica composite ***coating*** of)
 IT ***Coating*** materials
 (poly(vinyl alc.)-silica, for vascular prosthetics)
 IT Blood vessel
 (artificial, ***coatings*** for, poly(vinyl alc.)-silica as)
 IT Adhesion
 (bio-, of blood components, on poly(vinyl alc.)-silica surfaces, prosthetic ***coatings*** in relation to)

IT Prosthetic materials and Prosthetics
 (vascular, ***coatings*** for, poly(vinyl alc.)-silica for)
 IT ***7631-86-9*** , biological studies
 (composites contg. poly(vinyl alc.) and, as ***coatings***
 for artificial blood vessel, biocompatibility of)
 IT 9002-89-5, Poly(vinyl alcohol)
 (composites contg. silica and, as ***coatings*** for
 artificial blood vessel, biocompatibility of)
 IT 1343-98-2
 (crosslinking between poly(vinyl alc.) and, for ***coating***
 artificial blood vessel, biocompatibility of)
 IT ***78-10-4*** , Tetraethylsilicate
 (in prepn. of poly(vinyl alc.)-silica composite)
 IT 9005-49-6, biological studies
 (poly(vinyl alc.)-silica modified by, for ***coating***
 artificial blood vessel, biocompatibility of)

L7 ANSWER 9 OF 10 COPYRIGHT 1993 ACS
 AN CA103(2):14655z
 TI ***Photosensor***
 AU Sekimura, Nobuyuki; Fukaya, Masaki; Nakagawa, Katsumi; Komatsu,
 Toshiyuki; Shoji, Tatsumi; Furushima, Teruhiko
 CS Canon K. K.
 LO Japan
 SO Ger. Offen., 17 pp.
 PI DE 3423159 A1 3 Jan 1985
 AI DE 84-3423159 22 Jun 1984
 PRAI JP 83-112924 24 Jun 1983
 JP 84-2580 12 Jan 1984
 JP 84-2581 12 Jan 1984
 IC ICM H01L031-10
 ICS H01L031-18; H04N001-028
 SC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 SX 76
 DT P
 CO GWXXBX
 PY 1985
 LA Ger
 AB A low-cost, easily prepd. ***photosensor*** for use as a
 photoelec . converter for processing image information, such
 as in facsimile sending and receiving app. and in symbol reading
 devices consists of a glass substrate ***coated*** on both sides
 with a dielec. layer or layers, a ***photoelec*** . conversion
 layer based on amorphous Si and a pair of ***electrode*** layers
 in elec. contact with the conversion layer. The dielec. layers
 consist of SiO₂ with <10% P.
 KW ***photoelec*** converter amorphous hydrogenated silicon;
 silicon oxide dielec ***photoelec*** converter
 IT Group IIIA elements
 Group VA elements
 (***photoelec*** . converter with ***photoconductive***
 layer contg. hydrogenated amorphous silicon and)
 IT Halogens
 (***photoelec*** . converter with ***photoconductive***
 layer from hydrogenated amorphous silicon contg.)
 IT Glass, oxide
 (supports from, for ***photoelec*** . converters)
 IT Optical imaging devices
 (electro-, converters, with amorphous silicon ***photoelec***

. conversion layer and phosphorus-doped silicon dioxide dielec. layer)

IT Recording apparatus
(facsimile, amorphous silicon-based ***photoelec*** . converter for)

IT ***78-10-4***
(decompn. of, in silicon dioxide dielec. layer prodn. for ***photoelec*** . converter)

IT ***7631-86-9*** , uses and miscellaneous
(***photoelec*** . converter with amorphous hydrogenated silicon ***photoconductor*** layer and dielec. layer contg. phosphorus-doped)

IT 7723-14-0, uses and miscellaneous
(***photoelec*** . converter with hydrogenated amorphous silicon ***photoconductor*** layer and silicon dioxide dielec. layer contg.)

IT 1333-74-0, uses and miscellaneous
(***photoelec*** . converter with ***photoconductive*** layer contg. halogen-doped amorphous silicon and)

IT 7440-21-3, uses and miscellaneous
(***photoelec*** . converter with ***photoconductive*** layer contg. halogen-doped hydrogenated amorphous)

IT 7440-44-0, uses and miscellaneous 7782-44-7, uses and miscellaneous
(***photoelec*** . converter with ***photoconductive*** layer contg. hydrogenated amorphous silicon and)

L7 ANSWER 10 OF 10 COPYRIGHT 1993 ACS

AN CA96(16):133261q

TI Producing microstructures on solids

AU Fritzsche, Christian

CS Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung e.V.

LO Fed. Rep. Ger.

SO Ger. Offen., 7 pp.

PI DE 3015034 A1 29 Oct 1981

AI DE 80-3015034 18 Apr 1980

IC B01J019-08; G03F007-00; H01L021-306

SC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

SX 76

DT P

CO GWXXBX

PY 1981

LA Ger

AB A process for the prodn. of microstructures on solids is described in which the exposure and ***coating*** process are done together to give ***coated*** areas resistant to subsequent ***plasma*** etching. Thus, a SiO₂- ***coated*** Si wafer was imagewise exposed in a scanning electron microscope in the presence of 1,3,5-trichlorobenzene to give in the exposed areas an org. layer (50 nm) which was resisted to etching by a CF₄ ***plasma*** .

KW microstructure electron beam recording

IT ***Photoimaging*** compositions and processes
(in microstructure prodn. on solid materials)

IT Recording
(electron-beam, ***plasma*** -etching-resistant microstructure prodn. on solids by)

IT Etching
(sputter, in microstructure prodn. on solid materials)

IT ***78-10-4*** 91-20-3, uses and miscellaneous 92-52-4, uses
 and miscellaneous 106-99-0, uses and miscellaneous 106-99-0D,
 derivs. 108-88-3, uses and miscellaneous 108-90-7, uses and
 miscellaneous 287-92-3 542-92-7, uses and miscellaneous
 542-92-7D, derivs. 1313-27-5, uses and miscellaneous 1333-41-1
 7782-44-7, uses and miscellaneous 26140-60-3
 (electron-beam recording in presence of, for ***plasma***
 -etching-resistant microstructure prodn.)

IT 108-70-3
 (electron-beam recording in presence of, for ***plasma***
 -etching-resistant microstructure prodn. on solids)

IT 7440-21-3, uses and miscellaneous
 (microstructure prodn. on silicon dioxide- ***coated*** ,
 plasma -etching-resistant, electron-beam recording in
 prodn. of)

IT 75-73-0
 (***plasma*** , etching by, in microstructure prodn. on solid
 materials)

IT ***7631-86-9*** , uses and miscellaneous
 (silicon ***coated*** with, microstructure prodn. on,
 plasma -etching-resistant, electron beam recording in)

=> s (liquid? or solution? or aqueous?)/bi,ab and (gas? or vapor?)/bi,ab
 274810 LIQUID?/BI
 10351 LIQUID?/AB
 235154 SOLUTION?/BI
 4736 SOLUTION?/AB
 79190 AQUEOUS?/BI
 996 AQUEOUS?/AB
 475191 GAS?/BI
 662657 GAS?/AB
 112474 VAPOR?/BI
 169166 VAPOR?/AB

L8 67239 (LIQUID? OR SOLUTION? OR AQUEOUS?)/BI,AB AND (GAS? OR VAPO
 R?)/BI,AB

=> file reg

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

75.88

82.26

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

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-3.80

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STRUCTURE FILE UPDATES: 14 AUG 93 HIGHEST RN 149341-00-4

DICTIONARY FILE UPDATES: 16 AUG 93 HIGHEST RN 149341-00-4

=> s carbon oxide/cn

L9 1 CARBON OXIDE/CN

=> s carbon dioxide/cn or carbon monoxide/cn or nitrogen oxide/cn

1 CARBON DIOXIDE/CN

1 CARBON MONOXIDE/CN

1 NITROGEN OXIDE/CN

L10 3 CARBON DIOXIDE/CN OR CARBON MONOXIDE/CN OR NITROGEN OXIDE/

CN

=> s nitrogen dioxide/cn or oxygen/cn or ozone/cn

1 NITROGEN DIOXIDE/CN

1 OXYGEN/CN

1 OZONE/CN

L11 3 NITROGEN DIOXIDE/CN OR OXYGEN/CN OR OZONE/CN

=> s chlorine dioxide/cn or chlorine oxide/cn

1 CHLORINE DIOXIDE/CN

1 CHLORINE OXIDE/CN

L12 2 CHLORINE DIOXIDE/CN OR CHLORINE OXIDE/CN

=> file ca

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

26.47

108.73

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

CA SUBSCRIBER PRICE

0.00

-3.80

FILE 'CA' ENTERED AT 10:13:35 ON 17 AUG 93

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FILE COVERS 1967 - 7 Aug 93 (930807/ED) VOL 119 ISS 6.

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=> d his

(FILE 'HOME' ENTERED AT 10:00:56 ON 17 AUG 93)

FILE 'REGISTRY' ENTERED AT 10:01:03 ON 17 AUG 93

L1 1 S TEOS/CN

L2 2 S SILICON OXIDE/CN

FILE 'CA' ENTERED AT 10:01:31 ON 17 AUG 93

L3 1133243 S (LIGHT? OR UV OR U(W)V OR ULTRAVIOLET? OR PHOTO? OR LAS

L4 70680 S (MICROWAVE? OR PLASMA? OR RF OR DC OR ELECTRODE:)/BI,AB

L5 12037 S (C(W)V(W)D OR CVD OR DEPOSIT? OR COAT?)/BI,AB AND L4

L6 793 S L5 AND L2

L7 10 S L1 AND L6

L8 67239 S (LIQUID? OR SOLUTION? OR AQUEOUS?)/BI,AB AND (GAS? OR V

FILE 'REGISTRY' ENTERED AT 10:12:17 ON 17 AUG 93

L9 1 S CARBON OXIDE/CN

L10 3 S CARBON DIOXIDE/CN OR CARBON MONOXIDE/CN OR NITROGEN OXI

L11 3 S NITROGEN DIOXIDE/CN OR OXYGEN/CN OR OZONE/CN

L12 2 S CHLORINE DIOXIDE/CN OR CHLORINE OXIDE/CN

FILE 'CA' ENTERED AT 10:13:35 ON 17 AUG 93

=> s 18 and 11 and 12

3896 L1

101371 L2

L13 3 L8 AND L1 AND L2

=> d his

(FILE 'HOME' ENTERED AT 10:00:56 ON 17 AUG 93)

FILE 'REGISTRY' ENTERED AT 10:01:03 ON 17 AUG 93

L1

1 S TEOS/CN

L2

2 S SILICON OXIDE/CN

FILE 'CA' ENTERED AT 10:01:31 ON 17 AUG 93

L3 1133243 S (LIGHT? OR UV OR U(W)V OR ULTRAVIOLET? OR PHOTO? OR LAS

=> s l1 and l2 and (l9 or l10 or l11 or l12)

3896 L1

101371 L2

137 L9

138921 L10

185943 L11

2837 L12

L14 108 L1 AND L2 AND (L9 OR L10 OR L11 OR L12)

=> d l13 ti 1-3

L13 ANSWER 1 OF 3 COPYRIGHT 1993 ACS

TI The base-catalyzed hydrolysis and condensation reactions of dilute and concentrated TEOS ***solutions***

L13 ANSWER 2 OF 3 COPYRIGHT 1993 ACS

TI Plugging ***solution*** for cementing petroleum and ***gas*** wells at low positive and negative temperatures

L13 ANSWER 3 OF 3 COPYRIGHT 1993 ACS

TI Properties of silicon dioxide films prepared from tetraethoxysilane from ***gas*** and ***liquid*** phases

-- d l13 all 3

L4 70680 S (MICROWAVE? OR PLASMA? OR RF OR DC OR ELECTRODE:)/BI,AB
L5 12037 S (C(W)V(W)D OR CVD OR DEPOSIT? OR COAT?)/BI,AB AND L4
L6 793 S L5 AND L2
L7 10 S L1 AND L6
L8 67239 S (LIQUID? OR SOLUTION? OR AQUEOUS?)/BI,AB AND (GAS? OR V

FILE 'REGISTRY' ENTERED AT 10:12:17 ON 17 AUG 93

L9 1 S CARBON OXIDE/CN
L10 3 S CARBON DIOXIDE/CN OR CARBON MONOXIDE/CN OR NITROGEN OXI
L11 3 S NITROGEN DIOXIDE/CN OR OXYGEN/CN OR OZONE/CN
L12 2 S CHLORINE DIOXIDE/CN OR CHLORINE OXIDE/CN

FILE 'CA' ENTERED AT 10:13:35 ON 17 AUG 93

L13 3 S L8 AND L1 AND L2
L14 108 S L1 AND L2 AND (L9 OR L10 OR L11 OR L12)

=> s l14 and l3

L15 15 L14 AND L3

=> s l5 and l14

L16 4 L5 AND L14

=> d l16 ti 1-4

L16 ANSWER 1 OF 4 COPYRIGHT 1993 ACS
TI Manufacture of semiconductor device

L16 ANSWER 2 OF 4 COPYRIGHT 1993 ACS
TI Preparation of insulator films in manufacture of integrated circuits

L16 ANSWER 3 OF 4 COPYRIGHT 1993 ACS
TI ***Photosensor***

L16 ANSWER 4 OF 4 COPYRIGHT 1993 ACS
TI Producing microstructures on solids

=> s l15 or l16

L17 15 L15 OR L16

=> d ti 1-15

L17 ANSWER 1 OF 15 COPYRIGHT 1993 ACS
TI Method and apparatus for semiconductor device

L17 ANSWER 2 OF 15 COPYRIGHT 1993 ACS
TI Formation of of transparent amorphous films on substrates by sintering

L17 ANSWER 3 OF 15 COPYRIGHT 1993 ACS
TI Manufacture of semiconductor device

L17 ANSWER 4 OF 15 COPYRIGHT 1993 ACS
TI Manufacture of semiconductor devices

L17 ANSWER 5 OF 15 COPYRIGHT 1993 ACS
TI Vertical oxide etching without inducing change in critical dimensions

L17 ANSWER 6 OF 15 COPYRIGHT 1993 ACS
TI Methods for producing water-free silicon dioxide films

L17 ANSWER 7 OF 15 COPYRIGHT 1993 ACS
TI ***Excimer*** ***laser*** deposition of silica films: a
comparison between two methods

L17 ANSWER 8 OF 15 COPYRIGHT 1993 ACS
TI Covering semiconductor devices with silica films

L17 ANSWER 9 OF 15 COPYRIGHT 1993 ACS
TI Preparation of insulator films in manufacture of integrated circuits

L17 ANSWER 10 OF 15 COPYRIGHT 1993 ACS
TI Oxide film formation using ozone/organic-source APCD

L17 ANSWER 11 OF 15 COPYRIGHT 1993 ACS
TI Vapor-phase growing process

L17 ANSWER 12 OF 15 COPYRIGHT 1993 ACS
TI Thin-film formation

L17 ANSWER 13 OF 15 COPYRIGHT 1993 ACS
TI ***Photochemical*** vapor deposition of films

L17 ANSWER 14 OF 15 COPYRIGHT 1993 ACS
TI ***Photosensor***

L17 ANSWER 15 OF 15 COPYRIGHT 1993 ACS
TI Producing microstructures on solids

AN CA117(24):238657d
TI Formation of of transparent amorphous films on substrates by sintering

AU Brusasco, Raymond M.
CS United States Dept. of Energy
LO USA

SO U.S., 8 pp.
PI US 5143533 A 1 Sep 1992
AI US 91-748585 22 Aug 1991
IC ICM C03C025-02

NCL 065018100
SC 57-1 (Ceramics)

DT P
CO USXXAM
PY 1992
LA Eng

AB The process comprises coating a substrate with a thin film of a sinterable inorg. particulate glass-forming material, and irradiating the thin film for 1-10 s with a ***laser*** beam having diam. .apprx.3 mm, power range 20-50 W, and beam translation speed 0.3-10 mm/s, to sinter the glass-forming material and to form a transparent amorphous film on the substrate. The process is applied to the manuf. of ***lasers***, semiconductors, and other electronic or electro-optic devices.

KW silica ***laser*** sintering glass film

IT ***Lasers***
(carbon dioxide, sintering with, in silica thin film formation on substrates)

IT Sintering
(of glass-forming particles, with carbon dioxide ***laser***, in thin transparent film formation on substrates)

and O₃ at a flow rate ratio O₃/Si(OEt)₄ .1 to req. 6. The method is useful for manufg. a transistor with a ***lightly*** doped drain structure.

KW oxide side wall semiconductor device; transistor ***lightly*** doped drain

IT Transistors
(***lightly*** doped drain structures for, oxide side wall formation for, using tetraethoxy silane in ozone)

IT Semiconductor devices
(oxide side wall formation in manuf. of, using tetraethoxy silane in ozone)

IT ***78-10-4*** , Tetraethoxy silane ***10028-15-6*** , Ozone, uses
(oxide side wall formation using, in manuf. of semiconductor devices)

IT ***7631-86-9P*** , Silicon oxide, uses
(side walls, formation of, in manuf. of semiconductor devices)

L17 ANSWER 5 OF 15 COPYRIGHT 1993 ACS

AN CA116(20):204264n

TI Vertical oxide etching without inducing change in critical dimensions

AU Nagy, Andrew

CS Adv. Technol. Cent., Motorola

LO Mesa, AZ 85202, USA

SO Opt. Eng. (Bellingham, Wash.), 31(2), 335-340

SC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

DT J

CO OPEGAR

IS 0091-3286

PY 1992

LA Eng

AB An oxide etch in an AME 8110 is described that gives vertical oxide profiles without change in crit. dimensions relative to the resist mask. The technique requires the addn. of a polysilicon hard mask, and nonpolymg. etch conditions operating at very low pressures (5 mTorr). This reduces the etch rate of oxide to approx. half that seen at higher operating pressures (50 mTorr). Although these modifications increase the complexity and reduce the throughput of the process, these drawbacks must be weighted against the improvements obtained in sidewall angle and reproducibility.

KW lithog vertical silicon oxide plasma etching

IT Lithography
(vertical oxide etching process without inducing change in crit. dimensions for)

IT Resists
(***photo*** -, vertical oxide etching process for, without inducing change in crit. dimensions)

IT 75-46-7 2551-62-4 7440-59-7, Helium, uses ***7782-44-7*** , Oxygen, uses
(plasma, vertical oxide etching process using, for control of crit. dimensions)

IT 7440-21-3, Silicon, properties
(polycryst., vertical plasma etching process for, without inducing change in crit. dimensions)

IT ***78-10-4*** 124024-87-9, System 9
(vertical oxide etching with good crit. dimension control in relation to)

IT ***7631-86-9*** , Silica, properties

L17 ANSWER 10 OF 15 COPYRIGHT 1993 ACS
AN CA109(24):220759p
TI Oxide film formation using ozone/organic-source APCD
AU Ikeda, Yasuo; Mumasawa, Yoichirou; Sakamoto, Mitsuru
CS Div. VLSI Dev., NEC Corp.
LO Sagamihara, Japan
SO Denki Kagaku oyobi Kogyo Butsuri Kagaku, 56(7), 527-32
SC 76-10 (Electric Phenomena)
DT J
CO DKOKAZ
IS 0366-9297
PY 1988
LA Japan
AB Si oxide film formation was studied. All of deposition rate, IR absorption, densification by heat treatment, wet etching rate, I-V characteristics and P-doping ones strongly depended on the flow rate ratio of O₃ to TEOS (r). The films formed under r >1.0 showed good elec. insulation properties due to small amt. of O-H bonds within the films. SEM ***photographs*** of these films revealed those superior in the step-coverage characteristics. This process is a promising candidate for the multilayer interconnection insulation film in future VLSI.
KW silicon oxide ethoxysilane ozone oxidn; insulator silicon oxide film; interconnection insulator silicon oxide
IT Kinetics of etching
(of silica films contg. phosphorus)
IT Electric insulators and Dielectrics
(coatings, silicon oxide contg. phosphorus, ozone reactions with tetraethoxysilane in prepn. of)
IT ***11126-22-0*** , Silicon oxide
(film deposition of, using ozone and organosilicon compds.)
IT ***10028-15-6*** , Ozone, reactions
(oxidn. by, of tetraethoxysilane and silicon oxide film deposition)
IT 7723-14-0, Phosphorus, reactions
(oxidn. of tetraethoxysilane by ozone in presence of)
IT ***78-10-4*** , Tetraethoxysilane
(oxidn. of, by ozone in silicon oxide film deposition)

L17 ANSWER 14 OF 15 COPYRIGHT 1993 ACS
AN CA103(2):14655z
TI ***Photosensor***
AU Sekimura, Nobuyuki; Fukaya, Masaki; Nakagawa, Katsumi; Komatsu,
Toshiyuki; Shoji, Tatsumi; Furushima, Teruhiko
CS Canon K. K.
LO Japan
SO Ger. Offen., 17 pp.
PI DE 3423159 A1 3 Jan 1985
AI DE 84-3423159 22 Jun 1984
PRAI JP 83-112924 24 Jun 1983

JP 84-2580 12 Jan 1984

JP 84-2581 12 Jan 1984

IC ICM H01L031-10

ICS H01L031-18; H04N001-028

SC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

SX 76

DT P

CO GWXXBX

PY 1985

LA Ger

AB A low-cost, easily prepd. ***photosensor*** for use as a ***photoelec*** . converter for processing image information, such as in facsimile sending and receiving app. and in symbol reading devices consists of a glass substrate ***coated*** on both sides with a dielec. layer or layers, a ***photoelec*** . conversion layer based on amorphous Si and a pair of ***electrode*** layers in elec. contact with the conversion layer. The dielec. layers consist of SiO₂ with <10% P.

KW ***photoelec*** converter amorphous hydrogenated silicon; silicon oxide dielec ***photoelec*** converter

IT Group IIIA elements

Group VA elements

(***photoelec*** . converter with ***photoconductive*** layer contg. hydrogenated amorphous silicon and)

IT Halogens

(***photoelec*** . converter with ***photoconductive*** layer from hydrogenated amorphous silicon contg.)

IT Glass, oxide

(supports from, for ***photoelec*** . converters)

IT Optical imaging devices

(electro-, converters, with amorphous silicon ***photoelec*** . conversion layer and phosphorus-doped silicon dioxide dielec. layer)

IT Recording apparatus

(facsimile, amorphous silicon-based ***photoelec*** . converter for)

IT ***78-10-4***

(decompn. of, in silicon dioxide dielec. layer prodn. for ***photoelec*** . converter)

IT ***7631-86-9*** , uses and miscellaneous

(***photoelec*** . converter with amorphous hydrogenated silicon ***photoconductor*** layer and dielec. layer contg. phosphorus-doped)

IT 7723-14-0, uses and miscellaneous

(***photoelec*** . converter with hydrogenated amorphous silicon ***photoconductor*** layer and silicon dioxide dielec. layer contg.)

IT 1333-74-0, uses and miscellaneous

(***photoelec*** . converter with ***photoconductive*** layer contg. halogen-doped amorphous silicon and)

IT 7440-21-3, uses and miscellaneous

(***photoelec*** . converter with ***photoconductive*** layer contg. halogen-doped hydrogenated amorphous)

IT 7440-44-0, uses and miscellaneous ***7782-44-7*** , uses and miscellaneous

(***photoelec*** . converter with ***photoconductive*** layer contg. hydrogenated amorphous silicon and)

AN CA96(16):133261q
 TI Producing microstructures on solids
 AU Fritzsche, Christian
 CS Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung
 e.V.
 LO Fed. Rep. Ger.
 SO Ger. Offen., 7 pp.
 PI DE 3015034 A1 29 Oct 1981
 AI DE 80-3015034 18 Apr 1980
 IC B01J019-08; G03F007-00; H01L021-306
 SC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 SX 76
 DT P
 CO GWXXBX
 PY 1981
 LA Ger
 AB A process for the prodn. of microstructures on solids is described
 in which the exposure and ***coating*** process are done
 together to give ***coated*** areas resistant to subsequent
 plasma etching. Thus, a SiO₂- ***coated*** Si wafer was
 imagewise exposed in a scanning electron microscope in the presence
 of 1,3,5-trichlorobenzene to give in the exposed areas an org. layer
 (50 nm) which was resisted to etching by a CF₄ ***plasma*** .
 KW microstructure electron beam recording
 IT ***Photoimaging*** compositions and processes
 (in microstructure prodn. on solid materials)
 IT Recording
 (electron-beam, ***plasma*** -etching-resistant microstructure
 prodn. on solids by)
 IT Etching
 (sputter, in microstructure prodn. on solid materials)
 IT ***78-10-4*** 91-20-3, uses and miscellaneous 92-52-4, uses
 and miscellaneous 106-99-0, uses and miscellaneous 106-99-0D,
 derivs. 108-88-3, uses and miscellaneous 108-90-7, uses and
 miscellaneous 287-92-3 542-92-7, uses and miscellaneous
 542-92-7D, derivs. 1313-27-5, uses and miscellaneous 1333-41-1
 7782-44-7 , uses and miscellaneous 26140-60-3
 (electron-beam recording in presence of, for ***plasma***
 -etching-resistant microstructure prodn.)
 IT 108-70-3
 (electron-beam recording in presence of, for ***plasma***
 -etching-resistant microstructure prodn. on solids)
 IT 7440-21-3, uses and miscellaneous
 (microstructure prodn. on silicon dioxide- ***coated*** ,
 plasma -etching-resistant, electron-beam recording in
 prodn. of)
 IT 75-73-0
 (***plasma*** , etching by, in microstructure prodn. on solid
 materials)
 IT ***7631-86-9*** , uses and miscellaneous
 (silicon ***coated*** with, microstructure prodn. on,
 plasma -etching-resistant, electron beam recording in)

=> log y

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

35.08

143.81

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

CA SUBSCRIBER PRICE

ENTRY
-6.08

SESSION
-9.88

STN INTERNATIONAL LOGOFF AT 10:20:54 ON 17 AUG 93

TYMNET: call cleared by request

please log in: orbit

ORBIT: call connected

ENTER ORBIT USERID

p11061r

ENTER ORBIT USERID

y719bebi

ENTER ORBIT USERID

pt11061r

WELCOME TO ORBIT ONLINE SERVICE. (08/17/93 9:22 A.M. CENTRAL TIME)

ENTER SECURITY CODE:*

PLEASE RE-ENTER SECURITY CODE:*

PLEASE RE-ENTER SECURITY CODE:*

SAEG RELOADED WITH NEW FEATURES AND NEW NAME (MOBL)! SEE NEWSDOC N190

-

ANNOUNCING A NEW VERSION OF ORBIT!

POWERSEARCH--SEARCH UP TO 40 FILES SIMULTANEOUSLY! SEE NEWSDOC N188

-

USPA/USPB/USPM PRINT FORMAT CHANGES. SEE NEWSDOC N187

-

ENHANCEMENTS TO COMPENDEX*PLUS! SEE NEWSDOC N186

-

A NEW LOOK TO ORBIT BEGINNING THE WEEK OF MAY 31ST! SEE NEWSDOC N185 FOR DETAILS.

-

-- NEWSDOC UPDATE --

NEWS UPDATED 12 AUGUST 1993 (NEWSDOC N194). TYPE "NEWS" FOR AN INDEX.

YOU ARE NOW CONNECTED TO ORBIT.

FOR A TUTORIAL, ENTER ? OTHERWISE, ENTER A COMMAND OR SS.

file wpat

ELAPSED TIME ON ORBIT: 0.02 HRS.

\$0.90 EST COST CONNECT TIME.

\$0.90 EST TOTAL COST THIS ORBIT SESSION.

YOU ARE NOW CONNECTED TO WPAT.

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COVERS 1963 THRU WEEKLY UPDATE 9325/UP, 9325/UPEQ, 9318/UPA, 9246/UPB;
WPI 9324/UPEQ.

SS 1?
teos or tetraorthasilicat: or tetraorthosili:

OCCURS	TERM
89	TEOS
0	TETRAORTHASILICAT:
3	TETRAORTHOSILI:

SS 1 RESULT (92)

SS 2?
sio# or (silicon: or si or poly or polysi or polysilicon:)(3w)(oxide: or dioxide

*SEARCHING.....

OCCURS	TERM
54044	SIO#
190441	SILICON:
87319	SI
104550	POLY
677	POLYSI
2021	POLYSILICON:
283153	OXIDE:
29516	DIOXIDE:

SS 2 RESULT (67253)

SS 3?
light: or uv or u(w)v or ultraviolet: or ultra(2w)violet: or photo:

*SEARCHING.....

OCCURS	TERM
367877	LIGHT:
32159	UV
20960	ULTRAVIOLET:
386565	PHOTO:
86333	U
136251	V
13159	ULTRA
6534	VIOLET:

SS 3 RESULT (491569)

SS 4?
microwave: or plasma: or rf: or dc: or electrod:

*SEARCHING.....

OCCURS	TERM
31433	MICROWAVE:
40055	PLASMA:
17328	RF:
68590	DC:
321139	ELECTROD:

SS 4 RESULT (364779)

SS 5?
cvd or c(w)v(w)d or deposit: or coat:

*SEARCHING.....

OCCURS	TERM
8764	CVD
209641	DEPOSIT:
515530	COAT:
913814	C
136251	V
251999	D

SS 5 RESULT (469233)

SS 6?

(liquid: or solution: or soln: or aqueous:) and (gas: or vapor:)

*SEARCHING.....

OCCURS	TERM
329042	LIQUID:
162964	SOLUTION:
360564	SOLN:
92285	AQUEOUS:
599838	GAS:
26945	VAPOR:

SS 6 RESULT (102573)

SS 7?

(carbon: or chlorine: or nitrogen:)(3w)(oxide: or monoxide: or dioxide:)

*SEARCHING.....

OCCURS	TERM
320720	CARBON:
25318	CHLORINE:
69181	NITROGEN:
283153	OXIDE:
7240	MONOXIDE:
29516	DIOXIDE:

SS 7 RESULT (40003)

SS 8?

co or no or co2 or no2 or clo or clo2

*SEARCHING.....

OCCURS	TERM
156697	CO
2567062	NO
29671	CO2
34594	NO2
192	CLO
731	CLO2

SS 8 RESULT (2679362)

SS 9?

his

SS 1: TEOS OR TETRAORTHASILICAT: OR TETRAORTHOSILI: (92)

SS 2: SIO# OR (SILICON: OR SI OR POLY OR POLYSI OR POLYSILICON:) (3W) (OXIDE: OR DIOXIDE:) (67253)

SS 3: LIGHT: OR UV OR U (W) V OR ULTRAVIOLET: OR ULTRA (2W) VIOLET: OR PHOTO: (491569)

SS 4: MICROWAVE: OR PLASMA: OR RF: OR DC: OR ELECTROD: (364779)
SS 5: CVD OR C (W) V (W) D OR DEPOSIT: OR COAT: (469233)
SS 6: (LIQUID: OR SOLUTION: OR SOLN: OR AQUEOUS:) AND (GAS: OR VAPOR:
) (102573)
SS 7: (CARBON: OR CHLORINE: OR NITROGEN:) (3W) (OXIDE: OR MONOXIDE: OR
DIOXIDE:) (40003)
SS 8: CO OR NO OR CO2 OR NO2 OR CLO OR CLO2 (2679362)

SS 9?
ss 2 and ss 3 and ss 4 and ss 5

*SEARCHING.....
SS 9 RESULT (641)

SS 10?
ss 1 and ss 9

SS 10 RESULT (0)

SS 11?
ss 9 and (ss 7 or ss 8)

*SEARCHING.....
TOO MANY RESULTS IN THIS SS. REVISE SEARCH STRATEGY.

SS 11?
his

SS 1: TEOS OR TETRAORTHASILICAT: OR TETRAORTHOSILI: (92)
SS 2: SIO# OR (SILICON: OR SI OR POLY OR POLYSI OR POLYSILICON:) (3W) (OXIDE: OR DIOXIDE:) (67253)
SS 3: LIGHT: OR UV OR U (W) V OR ULTRAVIOLET: OR ULTRA (2W) VIOLET: OR PHOTO: (491569)
SS 4: MICROWAVE: OR PLASMA: OR RF: OR DC: OR ELECTROD: (364779)
SS 5: CVD OR C (W) V (W) D OR DEPOSIT: OR COAT: (469233)
SS 6: (LIQUID: OR SOLUTION: OR SOLN: OR AQUEOUS:) AND (GAS: OR VAPOR:) (102573)
SS 7: (CARBON: OR CHLORINE: OR NITROGEN:) (3W) (OXIDE: OR MONOXIDE: OR DIOXIDE:) (40003)
SS 8: CO OR NO OR CO2 OR NO2 OR CLO OR CLO2 (2679362)
SS 9: SS 2 AND SS 3 AND SS 4 AND SS 5 (641)
SS 10: SS 1 AND SS 9 (0)

SS 11?
ss 6 and ss 1 and ss 2

*SEARCHING
SS 11 RESULT (2)

SS 12?
prt fu 2

-1- (WPAT)
AN - 89-242847/34
XRAM- C89-108082
XRPX- N89-185117

TI	-	Evaporator for LPCVD plant - with cover carrying specified special safety fittings
DC	-	L03 U11
AW	-	LOW PRESSURE CHEMICAL VAPOUR DEPOSIT
PA	-	(SIEI) SIEMENS AG
IN	-	TREICHEL H, FUCHS D
NP	-	4
NC	-	11
PN	-	EP-328888-A 89.08.23 (8934) 6p G
		JP01245803-A 89.10.02 (8945)
		EP-328888-B1 92.05.20 (9221) 6p G C23C-016/44
		DE58901441-G 92.06.25 (9227) C23C-016/44
LA	-	G; G; G
DS	-	AT BE CH DE FR GB IT LI NL SE
CT	-	(G)EP-210476 J60212215 US4393013 EP-151200 EP-194501 EP-113518 DE1644008
		DE3136895 DE3404119 1.Jnl.Ref
PR	-	88.02.11 88DE-804249
AP	-	89.01.18 89EP-100809 89.02.10 89JP-032530 89.01.18 89DE-501441
FD	-	DE58901441 Based on EP-328888
IC	-	B01D-001/14 B01D-003/42 C03B-037/02 C03B-037/025 C23C-016/44 C30B-025/14
AB	-	(EP-328888)

A thermostated system for the secure controlled vaporization of toxic or highly reactive liquid media, used in LPCVD plants, consists of a casing with a lid carrying inlets and outlets for the carrier gas with valves for both. It also carries a filler valve, a temperature sensor and an integrated filling level indicator.

USE/ADVANTAGE - This minimises the risk of any egress of liquid reaction media during maintenance or cleaning. For the manufacture of undoped SiO2 layers of TEOS, As-doped SiO2 layers of triethylarsenite,

SS 12?
ss 9 and (ss 8 or ss 7)

*SEARCHING.....
TOO MANY RESULTS IN THIS SS. REVISE SEARCH STRATEGY.

SS 12?
ss 9 and ss 8

*SEARCHING.....
SS 12 RESULT (326)

SS 13?
ss 9 and ss 7

SS 13 RESULT (1)

SS 14?
prt fu

-1- (WPAT)
AN - 83-59091K/25 (59091K)
XRAM- C83-057322
XRPX- N83-106481
TI - Lig. crystal-enclosing electro-optical device component - contg.
substrate provided with oxide layer and reacted with aliphatic alcohol
DC - E17 L03 U14 U11 P81 P85
PA - (HUGA) HUGHES AIRCRAFT CO
TN - TACKNER AM.MARGERUM .JD.MILLER I.J

PN - DE3245002-A 83.06.16 (8325)
 J58150938-A 83.09.07 (8342) {JP}
 US4464134-A 84.08.07 (8434)
 CH-661597-A 87.07.31 (8733)
 DE3245002-C 90.09.20 (9038)
 J90052246-B 90.11.13 (9049) {JP}

LA - E
 PR - 81.12.10 81US-329452
 AP - 81.12.10 81US-329452 82.12.06 82DE-245002 82.12.10 82JP-216752
 IC - G02F-001/13 G09F-009/35 C09K-003/34
 AB - (DE3245002)

Process discloses the treatment of a substrate surface so that liq. crystals subsequently contacted with the surface are oriented with their directors at right angles to the surface. The surface is first provided with an oxide layer. The oxide layer is then reacted in the vapour-phase with alcohol mols. having formula ROH (where R is an aliphatic alkyl chain having formula $\text{CH}_2(\text{CH}_2)_n$ - and n is 9-23), to form a surface-coating contg. RO gps.

The prods. are used as components, e.g. electrodes in electro-optical structural elements, indicator structural elements, light-valves, etc. RO gps. can be generated on surface after sealing in prefabricated cells. Excess alcohol reagent need not be removed. Stable good quality surface orientation is achieved. (25pp)

SS 14?
 his

SS 1: TEOS OR TETRAORTHASILICAT: OR TETRAORTHOSILI: (92)
 SS 2: SIO# OR (SILICON: OR SI OR POLY OR POLYSI OR POLYSILICON:) (3W) (OXIDE: OR DIOXIDE:) (67253)
 SS 3: LIGHT: OR UV OR U (W) V OR ULTRAVIOLET: OR ULTRA (2W) VIOLET: OR PHOTO: (491569)
 SS 4: MICROWAVE: OR PLASMA: OR RF: OR DC: OR ELECTROD: (364779)
 SS 5: CVD OR C (W) V (W) D OR DEPOSIT: OR COAT: (469233)
 SS 6: (LIQUID: OR SOLUTION: OR SOLN: OR AQUEOUS:) AND (GAS: OR VAPOR:) (102573)
 SS 7: (CARBON: OR CHLORINE: OR NITROGEN:) (3W) (OXIDE: OR MONOXIDE: OR DIOXIDE:) (40003)
 SS 8: CO OR NO OR CO2 OR NO2 OR CLO OR CLO2 (2679362)
 SS 9: SS 2 AND SS 3 AND SS 4 AND SS 5 (641)
 SS 10: SS 1 AND SS 9 (0)
 SS 11: SS 6 AND SS 1 AND SS 2 (2) ← } SS 11 or SS 13 = ?
 SS 12: SS 9 AND SS 8 (326)
 SS 13: SS 9 AND SS 7 (1) ←

SS 14?
 ss 9 and (simultan: or sequent: or first: or second: or step:)

*SEARCHING.....

OCCURS	TERM
155273	SIMULTAN:
36802	SEQUENT:
573214	FIRST:
630849	SECOND:
228833	STEP:

SS 14 RESULT (250)

SS 15?
 ss 9 and (al or alcusi or alsu or alcu or aluminum:)

*SEARCHING

OCCURS	TERM
121028	AL
1	ALCUSI
68	ALSI
12	ALCU
3618	ALUMINUM:

SS 15 RESULT (146)

SS 16?

ss 14 and ss 15

SS 16 RESULT (47)

SS 17?

save etch

SAVE ETCH COMPLETED.

SS 17?

stop y

SESSION FINISHED 08/17/93 9:57 A.M. (CENTRAL TIME)

ELAPSED TIME ON WPAT: 0.58 HRS.

\$69.02 EST COST CONNECT TIME.

\$2.40 EST COST ONLINE PRTS: 3

\$71.42 EST TOTAL COST THIS WPAT SESSION.

ELAPSED TIME THIS SESSION: 0.60 HRS.

\$69.92 EST COST CONNECT TIME.

\$7.80 EST COST TELECOM.

\$2.40 EST COST ONLINE PRTS: 3

\$72.32 EST TOTAL COST THIS TERMINAL SESSION.

ORBIT SEARCH SESSION COMPLETED. THANKS FOR USING ORBIT!

.....
 *SEARCHING.....

OCCURS	TERM
89	TEOS
0	TETRAORTHASILICAT:
3	TETRAORTHOSILI:
54044	SIO#
190441	SILICON:
87319	SI
104550	POLY
677	POLYSI
2021	POLYSILICON:
283153	OXIDE:
29516	DIOXIDE:
367877	LIGHT:
32159	UV
20960	ULTRAVIOLET:
386565	PHOTO:
86333	U
136251	V
13159	ULTRA
6534	VIOLET:
31433	MICROWAVE:
40055	PLASMA:
17328	RF:
68590	DC:
321139	ELECTROD:
8764	CVD
209641	DEPOSIT:
515530	COAT:
913814	C
136251	V
251999	D
329042	LIQUID:
162964	SOLUTION:
360564	SOLN:
92285	AQUEOUS:
599838	GAS:
26945	VAPOR:
320720	CARBON:
25318	CHLORINE:
69181	NITROGEN:
283153	OXIDE:
7240	MONOXIDE:
29516	DIOXIDE:
156697	CO
2567062	NO
29671	CO2
34594	NO2
192	CLO
731	CLO2
155273	SIMULTAN:
36802	SEQUENT:
573214	FIRST:
630849	SECOND:
228833	STEP:
121028	AL
1	ALCUSI
68	ALSI
12	ALCU

3618 ALUMINUM:

SS 1: TEOS OR TETRAORTHASILICAT: OR TETRAORTHOSILI: (92)
SS 2: SIO# OR (SILICON: OR SI OR POLY OR POLYSI OR POLYSILICON:) (3W) (OXIDE: OR DIOXIDE:) (67253)
SS 3: LIGHT: OR UV OR U (W) V OR ULTRAVIOLET: OR ULTRA (2W) VIOLET: OR PHOTO: (491569)
SS 4: MICROWAVE: OR PLASMA: OR RF: OR DC: OR ELECTROD: (364779)
SS 5: CVD OR C (W) V (W) D OR DEPOSIT: OR COAT: (469233)
SS 6: (LIQUID: OR SOLUTION: OR SOLN: OR AQUEOUS:) AND (GAS: OR VAPOR:) (102573)
SS 7: (CARBON: OR CHLORINE: OR NITROGEN:) (3W) (OXIDE: OR MONOXIDE: OR DIOXIDE:) (40003)
SS 8: CO OR NO OR CO2 OR NO2 OR CLO OR CLO2 (2679362)
SS 9: 2 AND 3 AND 4 AND 5 (641)
SS 10: 1 AND 9 (0)
SS 11: 6 AND 1 AND 2 (2)
SS 12: 9 AND 8 (326)
SS 13: 9 AND 7 (1)
SS 14: 9 AND (SIMULTAN: OR SEQUENT: OR FIRST: OR SECOND: OR STEP:) (250)
SS 15: 9 AND (AL OR ALCUSI OR ALSI OR ALCU OR ALUMINUM:) (146)
SS 16: 14 AND 15 (47)

SS 17?

ss 9 and 65-85

SS 17 RESULT (370)

SS 18?

ss 9 and 86-87

SS 18 RESULT (86)

SS 19?

ss 12 and ss 17

SS 19 RESULT (99)

SS 20?

ss 12 and ss 18

SS 20 RESULT (81)

SS 21?

ss 14 and 17

SS 21 RESULT (133)

SS 22?

ss 14 and ss 18

SS 22 RESULT (40)

SS 23?

ss 14 and ss 17

SS 23 RESULT (133)

SS 24?

ss 15 and ss 17

SS 24 RESULT (100)

SS 25?

ss 15 and ss 18

SS 25 RESULT (11)

SS 26?

ss 16 and ss 17

SS 26 RESULT (31)

SS 27?

ss 16 and ss 18

SS 27 RESULT (4)

SS 28?

his

SS 1: TEOS OR TETRAORTHASILICAT: OR TETRAORTHOSILI: (92)

SS 2: SIO# OR (SILICON: OR SI OR POLY OR POLYSI OR POLYSILICON:) (3W) (OXIDE: OR DIOXIDE:) (67253)

SS 3: LIGHT: OR UV OR U (W) V OR ULTRAVIOLET: OR ULTRA (2W) VIOLET: OR PHOTO: (491569)

SS 4: MICROWAVE: OR PLASMA: OR RF: OR DC: OR ELECTROD: (364779)

SS 5: CVD OR C (W) V (W) D OR DEPOSIT: OR COAT: (469233)

SS 6: (LIQUID: OR SOLUTION: OR SOLN: OR AQUEOUS:) AND (GAS: OR VAPOR:) (102573)

SS 7: (CARBON: OR CHLORINE: OR NITROGEN:) (3W) (OXIDE: OR MONOXIDE: OR DIOXIDE:) (40003)

SS 8: CO OR NO OR CO2 OR NO2 OR CLO OR CLO2 (2679362)

SS 9: 2 AND 3 AND 4 AND 5 (641)

SS 10: 1 AND 9 (0)

SS 11: 6 AND 1 AND 2 (2)

SS 12: 9 AND 8 (326)

SS 13: 9 AND 7 (1)

SS 14: 9 AND (SIMULTAN: OR SEQUENT: OR FIRST: OR SECOND: OR STEP:) (250)

SS 15: 9 AND (AL OR ALCUSI OR ALSI OR ALCU OR ALUMINUM:) (146)

SS 16: 14 AND 15 (47)

SS 17: SS 9 AND 65-85 (370)

SS 18: SS 9 AND 86-87 (86)

SS 19: SS 12 AND SS 17 (99)

SS 20: SS 12 AND SS 18 (81)

SS 21: SS 14 AND 17 (133)

SS 22: SS 14 AND SS 18 (40)

SS 23: SS 14 AND SS 17 (133)

SS 24: SS 15 AND SS 17 (100)

SS 25: SS 15 AND SS 18 (11)

SS 26: SS 16 AND SS 17 (31)

SS 27: SS 16 AND SS 18 (4)

SS 28?

ss 25 or ss 27

SS 28 RESULT (11)

SS 29?

prt fu 11

-1- (WPAT)
AN - 87-282075/40
XRAM- C87-120002
XRPX- N87-211132
TI - Interference filter for colour-distinguishing element - comprises alternately laminated metal and dielectric films, with uppermost dielectric zinc sulphide film
DC - L03 S03 P81 R14
PA - (OMRO) OMRON TATEISI ELTRN KK
NP - 1
PN - J62197721-A 87.09.01 (8740) {JP}
PR - 86.02.25 86JP-038185
AP - 86.02.25 86JP-038185
IC - G01J-003/51 G02B-005/28
AB - (J62197721)
An interference filter consisting of alternately laminated metal films and dielectric films is provided on the light-accepting surface of a light-accepting element. The uppermost dielectric film is a protective film comprising ZnS. Thus the surface of the interference filter is covered with the ZnS layer and the lower layers are protected from water absorption.
In an embodiment, the films are: (1) n-Si base plate; (2) P+-Si domain; (3) SiO2 insulating layer; (4) Al electrode; (5) semitransparent metal films (ag); (6) dielectric films (mg); (7) ZnS film; (8) Au electrode. The P(+)-Si domain on the n-Si base plate constitutes a light-accepting element (Si photodiode). The photoelectric current of the Si photodiode is collected by the Au and Al electrodes separated by the SiO2 insulating layer. The multilayer film of Ag/MgF2 is formed by successive vacuum deposition followed by the final deposition of ZnS. The thickness of ZnS film is thin enough not to influence the light transmission through the Ag/MgF2 multilayer (30 nm for central wavelength 450 nm and half-value width 55 nm). (4pp Dwg.No 0/2)

-2- (WPAT)
AN - 87-207455/30
XR - SEE 87-238199
XRAM- C87-086881
XRPX- N87-155276
TI - Passive display device for imaging reflected or transmitted light - has two substrates provided with fixed electrodes and movable electrode between them
DC - A85 L03 U14 A14 A28 P85
PA - (PHIG) PHILIPS GLOEILAMPEN NV
IN - VEENVILET H, VERHULST AG, RAAYMAKERS AH
NP - 7
PN - EP-230081-A 87.07.29 (8730)
NL8600697-A 87.08.03 (8735)
J62160482-A 87.07.16 (8734) {JP}
US4807967-A 89.02.28 (8911)
US4948708-A 90.08.14 (9035)
EP-230081-B 91.04.17 (9116)
DE3678816-G 91.05.23 (9122)
LA - E
DS - DE FR GB NL DE FR GB NL
CT - (E)EP-143079 1.Jnl.Ref (E)EP-143079 1.Jnl.Ref
PR - 86.03.19 86NL-000697 86.01.09 86NL-000027
AP - 86.12.22 86EP-202356 86.03.19 86NL-000697 87.01.08 87US-001308
88.09.22 88US-249027 86.12.22 86EP-202356
IC - G09F-009/37 G02B-026/02 G09G-003/16 G03C-005/00 G06F-009/37

AB - (EP-230081)

Device has a transparent upper substrate and parallel to this and some distance away a second lower substrate, and a number of display elements for controlling the reflection or transmission of light, each element having at least one fixed electrode which is connected to the second substrate and an electrode which is movable between the substrates and which is also connected to the second substrate and which is provided with apertures and resilient elements.

Polymeric supports are provided on the second substrate which extend to a short distance from the transparent substrate, the movable electrode being supported by and connected to the ends of the supports facing away from the second substrate so that they lie against or almost against the transparent substrate.

USE/ADVANTAGE - The devices reflect or transmit light to display a chosen image and are an improvement over those described e.g. in NL7510103. The transparent substrate is supported by supports which are evenly distributed over the surface, so that the substrate remains entirely flat. In the non-energised state the entire movable electrode, including the bonding plates situated between the resilient elements and connected to and supported by the supports, lies against the transparent substrate, so that in the non-energised state a very uniform image is obtd. (9pp Dwg.No.0/3)

-3- (WPAT)

AN - 87-123985/18

XRAM- C87-051439

XRPX- N87-092649

TI - Single crystalline three colour target for television tubes - is made using a silicon-di:oxide masking layer

DC - L03 U11 V05 R45 R57

AW - PROJECT CRT CATHODE RAY

PA - (AMTT) AMERICAN TEL & TELEG CO

IN - HOU TW,HUO TCD

NP - 3

PN - DE3634478-A 87.04.30 (8718)

NL8602549-A 87.05.04 (8722)

US4786839-A 88.11.22 (8849)

LA - E

PR - 85.10.11 85US-786844

AP - 86.10.09 86DE-634478 86.10.10 86NL-002549 85.10.11 85US-786844

IC - C09K-011/80 C30B-029/28 H01J-009/22 H01J-029/32 H01J-031/20 H04N-009/22 H01J-049/10

AB - (DE3634478)

The target consists of a YAG substrate on which 3 consecutive layers have been grown by liquid phase epitaxy of YAG doped with suitable impurities to provide red, green and blue light upon stimulation with an electron-beam. The top 2 layers are then etched into a steps pattern (fig. 1) of strips oriented in the direction. A masking layer of SiO₂ is used to allow selected areas to be etched.

The SiO₂ layer is deposited by plasma-deposition and is etched into the desired pattern using a photoresist stage combined with a plasma-etching step. Then the YAG-layer exposed is etched in a hot mixture of phosphoric and sulphuric acid, pref. at a temp. between 240 and 300 deg.C.

USE/ADVANTAGE - By using SiO₂ layer as an etch mask, the process is simpler to carry out than those currently used. The orientation of the strips gives 10-20% higher light-output than conventional orientations. Vertical step-walls are obtained when using the oriented YAG-substrates improving the image definition. The process is used for the mfr. of targets for projection colour video tubes. (6pp Dwg.No 2/8)

-4- (WPAT)

AN - 87-103736/15

XRAM- C87-042934

XRPX- N87-077808

TI - Photosensitive lithographic plate material - comprises a compsn. layer on supporting base, and is coated with a fluoro:chemical surfactant on at least one side

DC - A89 G07 A14 P84

AW - POLYMETHACRYLATE

PA - (FUJF) FUJI PHOTO FILM KK

NP - 1

PN - J62042160-A 87.02.24 (8715) {JP}

PR - 85.08.19 85JP-181528

AP - 85.08.19 85JP-181528

IC - G03F-007/02

AB - (J62042160)

The photosensitive lithographic plate material, which has a photosensitive compsn. layer on the supporting base, is characterised by being coated on at least one side with fluorochemical surfactant layer.

ADVANTAGE - The plate material permits storage and handling in piles without putting paper or plastics sheets between each plate. No adhesion of a plate to another is caused by such handling.

In an example, a 0.3mm-thick Al plate was degreased by treating with 7 wt.% aq. Na₃PO₄ at 60 deg.C for 3 mins., and then sanded with powdery pumice suspended in water. After washing with water, the plate was immersed in 5 wt.% sodium silicate (SiO₂/Na₂O = 3.1-3.3, in molar ratio) soln. at 70 deg.C for 30-60 secs., rinsed thoroughly with water, and dried. The aluminium plate was coated with a mixt. of 5.00g of 2-hydroxyethyl methacrylate copolymer, 0.50g of 2-methoxy-4-hydroxy-5-benzoylbenzene sulphonic acid salt of p-diazodimphenylamine formaldehyde condensate, 0.10g of 'Oil Blue 603' (RTM), 0.05g of phosphorous acid and 100g of 2-methoxyethanol, to form a 2.5 g/m² photosensitive layer.

To the surface of photosensitive layer, a soln. of 'Megafac F-191' (RTM: RfSO₂NR(CH₂)₂OP(O)(OH)₂ in which Rf = perfluoroalkyl, R = alkyl) in 50% aq. ethanol was applied by spraying to form 80 mg/m² surfactant layer. (6pp Dwg.No.0/0)

-5- (WPAT)

AN - 86-342964/52

XRAM- C86-148851

TI - Resin mirror for copying machine use - comprises glass substrate coated with UV hardened resin, silicon di:oxide, reflective aluminium and protective silicon carbide coatings

DC - A89 L01

PA - (MIOC) MINOLTA CAMERA KK

NP - 1

PN - J61256945-A 86.11.14 (8652) {JP}

PR - 85.05.08 85JP-098232

AP - 85.05.08 85JP-098232

IC - C03C-017/38

AB - (J61256945)

Resin mirror with good durability comprises a glass substrate, a U.V. ray-hardened resin layer, undercoatings e.g. Al₂O₃, SiO₂ etc., reflecting Al coatings and protective SiC coatings, formed in succession on substrate. The formation of the undercoatings, reflection coatings and protective coatings is carried-out by the ion plating method by positioning ionising electrode at nearby vapourising source without heating. (6pp Dwg.No.0/5)

-6- (WPAT)
 AN - 86-328512/50
 XRAM- C86-142351
 XRPX- N86-245033
 TI - Processing photoelectric element semiconductor film - involves melting and recrystallising surface portion and then removing it
 DC - L03 U11 R46
 PA - (AGEN) AGENCY OF IND SCI TECH
 NP - 1
 PN - J61244019-A 86.10.30 (8650) {JP}
 PR - 85.04.22 85JP-086143
 AP - 85.04.22 85JP-086143
 IC - C30B-013/00 C30B-033/00 H01L-021/20 H01L-027/00
 AB - (J61244019)

Treatment of a semiconductor film as provided on a base support directly or via an intermediate layer, involves melting and recrystallising the semiconductor film followed by removing the surface layer of the molten and recrystallised semiconductor film.

USE/ADVANTAGE - The impurity-layer as deposited on the semiconductor film can be removed by the melting and recrystallising treatment followed by the removing treatment, and the element characteristic can be improved. Usable as photoelectric transducer element, insulating gate field effect transistor and the like photoelectric elements.

In an example on an alumina ceramic base plate (10) were provided a buffer layer (20) comprising silicon oxide film (8000A) and silicon nitride film (1400A) and a doping layer (21) comprising boron-contg. silicon oxide film (1700A). (20) and (21) form the intermediate layer constituents. A semiconductor layer (30) comprising a silicon thin film (about 3 microns) was super posed on (21) by hot-CVD. Ar-laser was applied on (30) and the molten and recrystallised impurities (comprising Al, Mg, Na) to a thickness of 1300A were removed by wet etching or dry etching. (31) is an electrode, (40) is a pattern layer and (41) is a transparent electrode. (3pp Dwg.No.3/3)

-7- (WPAT)
 AN - 86-208134/32
 XR - 86-180020
 XRAM- C86-089483
 XRAM- C87-045251
 XRPX- N86-155294
 XRPX- N87-081843
 TI - Insulation and/or protective film in electronic device - comprises aluminium nitride or lamination contg. aluminium nitride
 DC - L03 U11 R46 L03 U11
 AW - CHEMICAL VAPOUR DEPOSIT
 PA - (SEME) SEMICONDUCTOR ENERGY LAB
 NP - 2
 PN - J61140139-A 86.06.27 (8632) {JP}
 US4656101-A 87.04.07 (8716)
 LA - E
 PR - 84.12.13 84JP-263281 84.11.07 84JP-234387
 AP - 84.12.13 84JP-263281 85.11.07 85US-795917
 IC - H01L-021/31 H01L-023/48 H01L-029/00
 AB - (US4656101)

Electronic device includes an element with an insulating film or a protective film made of Al nitride, or a lamination of Al nitride and Si oxide or Si nitride.

ADVANTAGE - Al nitride is superior to Si nitride and has better

thermal conductivity, better UV permeability and fewer dangling bonds and clusters of Si.

In an example, MIS transistor consists of substrate field isolation gate electrode, gate insulation source and drain, interlayer insulation and protective film, the latter two both formed of Al nitride. (First major country equivalent to J61140139-A) (7pp Dwg.No.0/3)

-8- (WPAT)

AN - 86-166742/26

XRAM- C86-071714

XRPX- N86-124168

TI - Photoreceptor for electrophotography prodn. - by using amorphous silicon germanium layer contg. specified amt. of hydrogen as photoconductive layer

DC - G08 S06 P84

PA - (HITA) HITACHI KK

NP - 1

PN - J61100760-A 86.05.19 (8626) {JP}

PR - 84.10.24 84JP-222103

AP - 84.10.24 84JP-222103

IC - G03G-005/08

AB - (J61100760)

Photoreceptor for electrophotography has a photoconductive layer composed of amorphous silicon germanium including hydrogen, where the quantity of hydrogen used in the Si-H₂ connection is not less than 3 wt.%. A Si-H film made by a sputtering method, has a resistance higher than that made by a plasma CVD method. A SiC:H film of about 0.1 micron film thickness is formed on an Al drum by a sputtering method. The film is obtd. by sputtering the silicon target in an argon/hydrogen/methane atmos. (flowing ratio 18:12:5). The base temp. is 300 deg. C, and the sputtering pressure is 5mTorr. A -SiO₂.8GeO₂:H film of about 20 microns thickness is formed while setting the base temp. at 250 deg. C. In addition, a SiC:H film of about 0.1 microns thickness is formed while keeping the base temp. at 250 deg. C.

USE/ADVANTAGE - A photoreceptor having a high sensitivity to light of not less than 780 nm wavelength, can be obtd. and further charging properties of the photoreceptor can be improved. (7pp Dwg.No.1/11)

-9- (WPAT)

AN - 86-146549/23

XRAM- C86-062759

XRPX- N86-108471

TI - Prod'n. of amorphous silicon photoconductor for electrophotography - comprising substrate photoconductive layer, barrier layer and/or surface layer, by plasma CVD

DC - G08 S06 P84

AW - CHEMICAL VAPOUR DEPOSIT

PA - (MITU) MITSUBISHI CHEM IND KK

NP - 1

PN - J61080260-A 86.04.23 (8623) {JP}

PR - 84.09.28 84JP-203742

AP - 84.09.28 84JP-203742

IC - G03G-005/08

AB - (J61080260)

Photoconductor comprises (1) substrate, (2) photoconductive layer, (3) barrier layer and/or (4) surface layer. Every layer is formed making use of DC; thickness of (3) is 0.01-0.5 microns; and thickness of (4) is 0.03-2 microns.

(1) is e.g. Al, surface conductive glass, Fe, Cu, etc.
Specifically, in producing e.g. a three layer photoconductor, (3) e.g.

amorphous SiOx, SiNx, SiCx, etc., is formed to a thickness of 0.01-0.5 microns, (2) is formed on (3) using SiH4, SiCl4, or other gases to a thickness of 1-50 microns and finally, (4) e.g. amorphous SiOx, SiNx, SiCx, etc., is formed to a thickness of 0.03-1 microns. Every layer is formed using DC.

ADVANTAGE - Even though making use of DC alone, stress strain at interface of the layer is even resulting in no peeling; layer-forming velocity is high resulting in shortened process. As compared to AC or microwave method, equipment cost is much less. (4pp Dwg.No.0/0)

-10- (WPAT)

AN - 86-095292/15

XRAM- C86-040528

XRPX- N86-069849

TI - Photoresist sensitive to medium UV light - based on novolak and 1,2-naphthoquinone 2-di:azide 4-sulphonate of 2,3,4-tri:hydroxy-benzophenone

DC - A89 E14 G06 L03 A21 U11 P84 P83

PA - (FARH) AMER HOECHST CORP

IN - DICARLO J, MAMMATO D, ALBAN J

NP - 4

PN - EP-176871-A 86.04.09 (8615)

J61086749-A 86.05.02 (8624) {JP}

US4596763-A 86.06.24 (8628)

CA1263822-A 89.12.12 (9003)

LA - G; E

DS - AT BE CH DE FR GB IT LI NL SE

CT - (G)No-SR.Pub A3...8751 EP--92444 3.Jnl.Ref

PR - 84.10.01 84US-655824

AP - 85.10.01 85JP-216311 84.10.01 84US-655824

IC - G03F-007/08 G03C-001/72 G03C-005/08

AB - (EP-176871)

In the prodn. of a photoresist by coating a substrate with photoresist mixt. contg. a novolak (I) and a 1,2-naphthoquinone-2 -diazide-sulphonate ester (II) of 2,3,4-trihydroxy -benzophenone, selective exposure and development with an aq. alkaline soln., (II) is an ester of 1,2-naphthoquinone-2-di azide-4-sulphonic acid (III) and exposure is carried out with UV light of wavelength below 380 nm, pref. 295-380 nm.

Pref. the coating contains 75-99(wt.)% (I) and 1-25% (II) and pref. also a dyestuff. It is applied to a Si substrate from a soln. in a glycol partial ether.

USE/ADVANTAGE - The process gives high speed with high image resolution and resistance to aq.-alkaline developers and plasmas. It is useful in the prodn. of reliefs and miniaturised ICs (LSICs). (21pp Dwg.No.0/0)

-11- (WPAT)

AN - 86-044808/07

XRAM- C86-018728

XRPX- N86-032680

TI - Thermal magnetic memory material - having amorphous magnetic memory layer treated by fluorine- and/or nitrogen-ion contg. plasma gas

DC - L03 M13 U14 V02 R35 R42

PA - (CANO) CANON KK

NP - 1

PN - J60262410-A 85.12.25 (8607) {JP}

PR - 84.06.11 84JP-118221

AP - 84.06.11 84JP-118221

IC - C23C-014/58 G11C-013/05 H01F-041/14

AB - (J60262410)

The amorphous magnetic layer is treated with plasma gas of fluorine and/or nitrogen ions.

ADVANTAGE - Kerr rotation angle and coercive force does not diminish with time. Stability against corrosion is improved.

In an example, on a glass base plate, a layer of ZrO₂ to prevent light reflection was formed by electron beam vapour deposition. On the ZrO₂ layer, amorphous memory material layer Fe₁₉Gd₃Tb₃ was sputtered in Ar gas. After exhausting Ar gas, N₂ gas was supplied into the sputtering appts. (8 x 10 power-3 torr) and ionised to make plasma gas of nitrogen. The memory layer was treated with the nitrogen ions in the plasma gas (0.5min.). The electric power was 200mW/1cm of memory layer. A protective layer of Al, and a second protection layer of SiO₂ was successively formed and the arrangement united with a glass protection plate with adhesive. (5pp Dwg.No.0/2)

SS 29?

ss 5 (10w) (simultan: or sequen: or first: or second: or step:)

*SEARCHING.....

OCCURS	TERM
155273	SIMULTAN:
127933	SEQUEN:
573214	FIRST:
630849	SECOND:
228833	STEP:

SS 29 RESULT (18071)

SS 30?

(ss 3 (10w) ss 5) and (ss 4 (10w) ss 5)

*SEARCHING.....

SS 30 RESULT (883)

SS 31?

his

SS 1: TEOS OR TETRAORTHASILICAT: OR TETRAORTHOSILI: (92)

SS 2: SIO# OR (SILICON: OR SI OR POLY OR POLYSI OR POLYSILICON:) (3W) (OXIDE: OR DIOXIDE:) (67253)

SS 3: LIGHT: OR UV OR U (W) V OR ULTRAVIOLET: OR ULTRA (2W) VIOLET: OR PHOTO: (491569)

SS 4: MICROWAVE: OR PLASMA: OR RF: OR DC: OR ELECTROD: (364779)

SS 5: CVD OR C (W) V (W) D OR DEPOSIT: OR COAT: (469233)

SS 6: (LIQUID: OR SOLUTION: OR SOLN: OR AQUEOUS:) AND (GAS: OR VAPOR:) (102573)

SS 7: (CARBON: OR CHLORINE: OR NITROGEN:) (3W) (OXIDE: OR MONOXIDE: OR DIOXIDE:) (40003)

SS 8: CO OR NO OR CO₂ OR NO₂ OR CLO OR CLO₂ (2679362)

SS 9: 2 AND 3 AND 4 AND 5 (641)

SS 10: 1 AND 9 (0)

SS 11: 6 AND 1 AND 2 (2)

SS 12: 9 AND 8 (326)

SS 13: 9 AND 7 (1)

SS 14: 9 AND (SIMULTAN: OR SEQUENT: OR FIRST: OR SECOND: OR STEP:) (250)

SS 15: 9 AND (AL OR ALCUSI OR ALSI OR ALCU OR ALUMINUM:) (146)

SS 16: 14 AND 15 (47)

SS 17: SS 9 AND 65-85 (370)

SS 18: SS 9 AND 86-87 (86)

SS 19: SS 12 AND SS 17 (99)
 SS 20: SS 12 AND SS 18 (81)
 SS 21: SS 14 AND 17 (133)
 SS 22: SS 14 AND SS 18 (40)
 SS 23: SS 14 AND SS 17 (133)
 SS 24: SS 15 AND SS 17 (100)
 SS 25: SS 15 AND SS 18 (11)
 SS 26: SS 16 AND SS 17 (31)
 SS 27: SS 16 AND SS 18 (4)
 SS 28: SS 25 OR SS 27 (11)
 SS 29: SS 5 (10W) (SIMULTAN: OR SEQUEN: OR FIRST: OR SECOND: OR STEP:
) (18071)
 SS 30: (SS 3 (10W) SS 5) AND (SS 4 (10W) SS 5) (883)

SS 31?
 ss 9 and 65-87

SS 31 RESULT (456)

SS 32?
 ss 29 and ss 31

SS 32 RESULT (58)

SS 33?
 ss 30 and ss 31

SS 33 RESULT (51)

SS 34?
 ss 32 or ss 33 not ss 28

SS 34 RESULT (95)

SS 35?
 ss 34 and ss 15

SS 35 RESULT (28)

SS 36?
 prt ti 28

- 1- (WPAT)
 TI - Passive display device for imaging reflected or transmitted light - has two substrates provided with fixed electrodes and movable electrode between them
- 2- (WPAT)
 TI - Etching liquid for palladium but not palladium silicate - comprises ammonium iodide, iodine and water, used in palladium silicate electrode prodn.
- 3- (WPAT)
 TI - Patterning high reflectance layers - using photoresist mask with light absorbing film between photoresist and reflective layer
- 4- (WPAT)
 TI - Thin film transistor - formed by isolator substrate with gate electrode and semi conductor layer with source drain electrode

- 5- (WPAT)
TI - Field effect transistor mfr. - involves forming two insulating layers of silicon nitride sepd. by silica layer which etches at more rapid rate
- 6- (WPAT)
TI - Photoelectric conversion device mfr. - by successive deposition on insulating substrate of first electrode, first (semi-)insulating thin film, semiconductor layer, etc.
- 7- (WPAT)
TI - Semiconductor device mfr. - by forming silica film, forming photoresist patterns, plasma etching, forming second photoresist patterns, depositing aluminium film etc.
- 8- (WPAT)
TI - Amorphous thin-film solar cell - with amorphous high polymer sulphur nitride layer of schottky barrier-forming material formed on semiconductor layer
- 9- (WPAT)
TI - Reproducible silver electrode mfr. for semiconductors - by electroplating the silver on the substrate via a subsequently etched aluminium electrode
- 10- (WPAT)
TI - Forming semiconductor device avoiding damage to electrode regions - involves forming eutectic aluminium-silicon alloy on which photoresist layer is deposited
- 11- (WPAT)
TI - Germanium photoconductive device - with (iii) crystal face used as active surface so that the dark current of the device is decreased
- 12- (WPAT)
TI - Semiconductor device prodn. - where aluminium is deposited on substrate and electrode pattern formed by removing photoresist, protective and metal layers
- 13- (WPAT)
TI - Prodn. of MIS transistor with short channel region - by depositing metallic film on p-type silicon substrate through silicon di:oxide film, oxidising to form gate insulating film etc.
- 14- (WPAT)
TI - Semiconductor device prodn. - without using chemical etching in prodn. of electrodes, avoiding side-etching of metal layer
- 15- (WPAT)
TI - Semiconductor device prodn. - without using chemical etching in the prodn. of electrodes, avoiding side-etching of metal layer
- 16- (WPAT)
TI - Semiconductor device prodn. - without using chemical etching in prodn. of electrodes and wiring layers, avoiding side-etching of metal layer
- 17- (WPAT)
TI - Semiconductor device prodn. - without chemical etching in prodn. of electrodes and wiring layers, avoiding side-etching of metal layer
- 18- (WPAT)

TI - Semiconductor prodn. - in which metal layer, used in mfr. of contact electrodes, is formed by electron beam deposition using protecting layers as X-ray shields

-19- (WPAT)

TI - Conductive wiring pattern prodn. in high density integrated circuit - by first forming first mask pattern on semiconductor substrate in process including selective etching

-20- (WPAT)

TI - Multi-wiring structure prodn. - including deposition of oxide layer with window and anodically oxidisable layer and selective removal and anodic oxidn. of (I)

-21- (WPAT)

TI - Bump electrodes formation on semiconductor pad electrodes - using lift-off technique to remove unnecessary metal film, avoiding circuit corrosion by acid or alkali

-22- (WPAT)

TI - Bump electrodes formation on semiconductor pad electrodes - removing a first metal film pattern without using acid or alkali, preventing corrosion of circuit

-23- (WPAT)

TI - Bump electrodes formation on semiconductor pad electrodes - preventing corrosion of circuit elements by mechanical removal of metal layers

-24- (WPAT)

TI - Bump electrodes formation on semiconductor pad electrodes - preventing corrosion of circuit elements by mechanical removal of metal layers

-25- (WPAT)

TI - Bump electrodes formation on semiconductor pad electrodes - preventing corrosion of circuit elements by mechanical removal of metal layers

-26- (WPAT)

TI - Bump electrodes formation on semiconductor pad electrodes - with corrosion of electrode prevented, during etching, by prior coating of oxide film

-27- (WPAT)

TI - Semiconductor device prodn. - using selective etching of successive silica and photoresist layers, depositing e.g. aluminium to form wiring pattern

-28- (WPAT)

TI - Semiconductor integrated circuit mfr - having multilayer interconnections of metal and insulating material

SS 36?

prt fu 1,5-8,10,12,14,16,20,27-28

-1- (WPAT)

AN - 87-207455/30

XR - SEE 87-238199

XRAM- C87-086881

XRPX- N87-155276

TI - Passive display device for imaging reflected or transmitted light - has two substrates provided with fixed electrodes and movable electrode

between them

DC - A85 L03 U14 A14 A28 P85

PA - (PHIG) PHILIPS GLOEILAMPEN NV

IN - VEENVILET H, VERHULST AG, RAAYMAKERS AH

NP - 7

PN - EP-230081-A 87.07.29 (8730)
 NL8600697-A 87.08.03 (8735)
 J62160482-A 87.07.16 (8734) {JP}
 US4807967-A 89.02.28 (8911)
 US4948708-A 90.08.14 (9035)
 EP-230081-B 91.04.17 (9116)
 DE3678816-G 91.05.23 (9122)

LA - E

DS - DE FR GB NL DE FR GB NL

CT - (E)EP-143079 1.Jnl.Ref (E)EP-143079 1.Jnl.Ref

PR - 86.03.19 86NL-000697 86.01.09 86NL-000027

AP - 86.12.22 86EP-202356 86.03.19 86NL-000697 87.01.08 87US-001308
 88.09.22 88US-249027 86.12.22 86EP-202356

IC - G09F-009/37 G02B-026/02 G09G-003/16 G03C-005/00 G06F-009/37

AB - (EP-230081)

Device has a transparent upper substrate and parallel to this and some distance away a second lower substrate, and a number of display elements for controlling the reflection or transmission of light, each element having at least one fixed electrode which is connected to the second substrate and an electrode which is movable between the substrates and which is also connected to the second substrate and which is provided with apertures and resilient elements.

Polymeric supports are provided on the second substrate which extend to a short distance from the transparent substrate, the movable electrode being supported by and connected to the ends of the supports facing away from the second substrate so that they lie against or almost against the transparent substrate.

USE/ADVANTAGE - The devices reflect or transmit light to display a chosen image and are an improvement over those described e.g. in NL7510103. The transparent substrate is supported by supports which are evenly distributed over the surface, so that the substrate remains entirely flat. In the non-energised state the entire movable electrode, including the bonding plates situated between the resilient elements and connected to and supported by the supports, lies against the transparent substrate, so that in the non-energised state a very uniform image is obtd. (9pp Dwg.No.0/3)

-5- (WPAT)

AN - 81-70725D/39 (70725D)

XRAM- C81-D70725

TI - Field effect transistor mfr. - involves forming two insulating layers of silicon nitride sepd. by silica layer which etches at more rapid rate

DC - L03 R46

PA - (MATU) MATSUSHITA ELEC IND KK

NP - 1

PN - J56100482-A 81.08.12 (8139) {JP}

PR - 80.01.14 80JP-002767

IC - H01L-029/80

AB - (J56100482)

Method comprises (1) laminating an insulating layer (2) of Si₃N₄ an insulating layer (3) of SiO₂ and an insulating layer (4) of Si₃N₄ in order on a semiconductor substrate 1, then coating a photoresist layer (5) having an opening selectively on the third layer. The insulating layers are etched off selectively through the opening to form an opening (6) through which the surface of the substrate is partially exposed. A

metal layer (7) is deposited on the exposed surface, before removing the resist-layer (5), coating a second photoresist layer (8) on the metal layer (7) and on the second Si₃N₄ layer (4) before removing the insulating layers.

The SiO₂ layer has a high etching rate, so that the layer is etched wider than the first Si₃N₄ layer which has a low etching rate. The SiO₂ layer is widely etched, so that the second photo-resist layer (8) covers the part of the first Si₃N₄ placed around the metal layer. An ohmic metal layer (9) is formed on the second resist layer (8) and on the exposed substrate. The second resist layer is removed.

The substrate is GaAs. The metal layer of Al is a gate electrode. The remaining ohmic layers (9a,9b) are used as source and drain electrode (5). (4pp Dwg.No.2-8)

-6- (WPAT)

AN - 81-66911D/37 (66911D)

XR - 85-035238

XRAM- C81-D66911

TI - Photoelectric conversion device mfr. - by successive deposition on insulating substrate of first electrode, first (semi-)insulating thin film, semiconductor layer, etc.

DC - A85 L03 R46

AW - METAL INSULATE SEMICONDUCTOR

PA - (YAMA/) YAMAZAKI S

NP - 2

PN - J56093380-A 81.07.28 (8137) {JP}

J59229879-A 84.12.24 (8506) {JP}

PR - 79.12.26 79JP-169942 84.00.00 84JP-087522

IC - H01L-031/18

AB - (J56093380)

A first electrode is formed on an insulating substrate. A first insulating or semi-insulating thin film is formed on the first electrode. A semiconductor layer is formed on the insulating or semi-insulating film. A second insulating or semi-insulating thin film (I) is formed on the semiconductor layer. A second electrode is formed on (I). Photoelectric conversion device e.g. solar cell is obtd.

Specifically a transparent SnO₂ electrode having a lead portion is formed on a glass substrate. A 2-30 angstroms thick SiO₂ film, an amorphous Si layer and a 2-50 angstroms thick Si₃N₄ film are formed on the transparent SnO₂ electrode. An Al electrode having a lead portion is formed on the Si₃N₄ film by vacuum deposition. A protective film of epoxy resin is formed on the Al electrode. Double MIS type solar cell is fabricated. (6pp)

-7- (WPAT)

AN - 81-48439D/27 (48439D)

XRAM- C81-D48439

TI - Semiconductor device mfr. - by forming silica film, forming photoresist patterns, plasma etching, forming second photoresist patterns, depositing aluminium film etc.

DC - L03 R46

AW - THERMAL OXIDATION SILICON DI OXIDE NITROGEN@ ELECTRON BEAM VAPOUR DEPOSIT

PA - (MATU) MATSUSHITA ELEC IND KK

NP - 1

PN - J56055055-A 81.05.15 (8127) {JP}

PR - 79.10.12 79JP-132331

IC - H01L-021/30

AB - (J56055055)

SiO₂ film is formed on a semiconductor substrate by thermal oxidn. First photoresist patterns are formed on the SiO₂ film. The semiconductor

substrate is placed in an atmos. of a nitrogen gas plasma and subjected to plasma treatment to form modified layers on the first photoresist patterns. Second photoresist patterns are formed on the modified layers. An Al film is deposited on the entire surface of the substrate by electron beam vapour deposition. The second photoresist patterns are removed from the modified layers by a resist-removing soln. e.g. fuming HNO₃. The first photoresist patterns are removed from the SiO₂ film to form an Al pattern.

-8- (WPAT)

AN - 81-12533D/08 (12533D)

XRAM- C81-D12533

TI - Amorphous thin-film solar cell - with amorphous high polymer sulphur nitride layer of schottky barrier-forming material formed on semiconductor layer

DC - L03 R46

PA - (SHAF) SHARP KK

NP - 1

PN - J55160475-A 80.12.13 (8108) {JP}

PR - 79.05.31 79JP-068549

IC - H01L-031/04

AB - (J55160475)

In an amorphous thin-film solar cell of Schottky barrier type, an amorphous high polymer sulphur nitride (SN)_x layer as a Schottky barrier-forming material is formed on an amorphous semiconductor layer by plasma synthesis.

Amorphous thin-film solar cell has a large light-receiving surface and high photoelectric conversion efficiency. Typically an Al-Ag grid electrode is deposited on a glass substrate. An In₂O₃-SnO₂ film by low-pressure plasma CVD of mixed gas of H₂S, NH₃ and N₂. A silicon oxide film is formed on the (SN)_x film by plasma CVD of SiH₄, N₂ and O₂. An a-SiF_x film is formed on the silicon oxide film. An n(+)-type a-SiF_x film, an Al-Ag back electrode and a Si₃N₄ film are formed on the a-SiF_x film.

-10- (WPAT)

AN - 80-89085C/50 (89085C)

TI - Forming semiconductor device avoiding damage to electrode regions - involves forming eutectic aluminium-silicon alloy on which photoresist layer is deposited

DC - L03 R46

PA - (MITQ) MITSUBISHI ELECTRIC CORP

NP - 1

PN - J55138833-A 80.10.30 (8050) {JP}

PR - 79.04.17 79JP-047784

IC - H01L-021/28

AB - A SiO₂ film (2) is formed on a Si substrate (1). Impurity-diffused regions are formed on the Si substrate (1). A poly-Si layer (5) is formed on a gate oxide layer. A thick SiO₂ layer (4) is formed on the entire surface of the substrate. Contact holes are made in the thick SiO₂ layer (4).

An Al thin film (6) contg. Si is deposited on the thick SiO₂ layer (4), the impurity-diffused regions (3) and the poly-Si layer (5). The Al thin film (6) contg. Si is heat-treated to form eutectic alloy (9). A photoresist layer (7) is formed on the eutectic alloy (9). The photoresist layer (7) is patterned. The eutectic alloy layer (9) is selectively etched by plasma etching using CF₄ gas to form electrodes and wiring layers.

Damage is prevented to electrode regions on a semiconductor device because of a substrate coated with Al contg. Si is heat-treated.

-12- (WPAT)

AN - 79-14770B/08 (14770B)

TI - Semiconductor device prodn. - where aluminium is deposited on substrate and electrode pattern formed by removing photoresist, protective and metal layers

DC - L03 R46 U11 U12

PA - (MATU) MATSUSHITA ELEC IND KK

NP - 1

PN - J54005659-A 79.01.17 (7908) {JP}

PR - 77.06.15 77JP-071288

IC - H01L-021/30

AB - A first photoresist layer is coated on an SiO₂ layer formed on a Si substrate. A protective layer of Al deposited over the first photoresist layer is selectively removed through a second photoresist layer having a desired pattern, providing a desired pattern for forming wiring regions. The first photoresist layer is then selectively etched using the second photoresist layer and the protective layer as a mask, exposing the SiO₂ layer.

The etching of the first photoresist layer is carried by a sputter or plasma etching technique. A thick metal layer of Al is deposited over the substrate surface to form metal layers (I, II). The first photoresist layer, the protective layer and the metal layer (II) are removed from the substrate surface at the same time to provide an electrode pattern.

Fine, thick electrode pattern is easily manufactured because the thick metal layer is accurately lifted off.

-14- (WPAT)

AN - 78-62800A/35 (62800A)

TI - Semiconductor device prodn. - without using chemical etching in prodn. of electrodes, avoiding side-etching of metal layer

DC - L03 R46 U11 U12

PA - (TOKE) TOKYO SHIBAURA ELEC LTD

NP - 1

PN - J53086166-A 78.07.29 (7835) {JP}

PR - 77.01.07 77JP-000340

IC - H01L-021/28

AB - A p-type base region and an n-type emitter region are formed in an n-type Si substrate by using an SiO₂ layer (I). A phosphosilicate glass layer (II) (thickness : tPSG) having a getter effect is then deposited over (I) and a photoresist layer (thickness : tR) is coated on (II) and is patterned.

(II) and (I) are then successively etched using the photo-resist layer as a mask, to give electrode windows. Al is deposited to a thickness of t_m over the substrate surface to make an Al layer. The relationship between two insulating layers and the metal layer is defined by (tPSG + tR) - t_m ≥ 1.5 μ. Finally the photoresist layer is removed from the substrate surface.

Since chemical etching process is not used in the prodn of electrodes, the metal layer is not side-etched, giving an accurate metal pattern. The semiconductor device is protected from unwanted contaminations by (II).

-16- (WPAT)

AN - 78-62798A/35 (62798A)

TI - Semiconductor device prodn. - without using chemical etching in prodn. of electrodes and wiring layers, avoiding side-etching of metal layer

DC - L03 R46 U11 U12

PA - (TOKE) TOKYO SHIBAURA ELEC LTD

NP - 1
 PN - J53086164-A 78.07.29 (7835) {JP}
 PR - 77.01.07 77JP-000338
 IC - H01L-021/28
 AB - A p-type base region and an n-type emitter region are formed in an n-type Si substrate using a SiO₂ layer (I). A phosphosilicate glass layer (II) having a getter effect is then deposited over (I).
 A photoresist layer is then coated on (II) and is patterned (II) and (I) are successively etched using the photoresist layer as a mask to form electrode windows. Al is then deposited over the substrate surface. Finally the photoresist layer is removed from the substrate surface.
 Since chemical etching is not used in the mfr. of electrodes and wiring layers, the metal layer is not side-etched thus giving an accurate metal pattern on the substrate. Due to the getter effect of (II), the device is protected from unwanted contaminations.

-20- (WPAT)

AN - 78-22891A/12 (22891A)
 TI - Multi-wiring structure prodn. - including deposition of oxide layer with window and anodically oxidisable layer and selective removal and anodic oxidn. of (I)
 DC - L03 R46 R59 U11 U12 V04
 PA - (NIDE) NIPPON ELECTRIC KK
 NP - 2
 PN - J53015088-A 78.02.10 (7812) {JP}
 J59063746-A 84.04.11 (8421) {JP}
 PR - 76.07.27 76JP-089808 83.00.00 83JP-137041
 IC - H01L-021/88 H05K-001/00
 AB - A window for an electrode is formed in an oxide layer (I) on a Si substrate (III). An anodically oxidisable metal layer (II) such as Al is deposited on the surface of (III) and (II) is selectively removed using a photoresist layer to make a first wiring Al layer.
 The entire surface of (II) is anodically oxidised to cover it with an alumina layer. After a window is formed in the alumina layer it is covered with a Si oxide layer. Si coating liq. is coated over the Si oxide layer and heated to produce a Si oxide layer. A through-hole is formed in the double Si oxide layer to expose the Al surface. Al is then deposited over the substrate surface and selectively removed to form a second wiring Al layer.
 The first wiring Al layer is electrically insulated from the second wiring Al layer because of the alumina layer and double insulating layer.

-27- (WPAT)

AN - 77-53295Y/30 (53295Y)
 TI - Semiconductor device prodn. - using selective etching of successive silica and photoresist layers, depositing e.g. aluminium to form wiring pattern
 DC - L03 R46 U11 U12
 PA - (NIDE) NIPPON ELECTRIC KK
 NP - 1
 PN - J52071978-A 77.06.15 (7730) {JP}
 PR - 75.12.11 75JP-147987
 IC - H01L-021/28
 AB - A SiO₂ film is deposited on a Si substrate. A hole is made in the SiO₂ film by photoresist techniques. A first photo-resist layer (I) is formed over the substrate and a film (II) of metal oxide e.g. SiO₂ is formed by vacuum deposition. A second photoresist layer (III) is deposited over the SiO₂ film (II) so that a wiring pattern is formed. The SiO₂ film (II) is selectively etched using the photoresist layer (III) as a mask. The SiO₂ film (II) is laterally etched by controlling an etching period, so that an overhang structure is formed.

The the first photoresist layer (I) is etched using the second photoresist layer (III) and the SiO₂ film (II) as a mask. Wiring alyers of metal e.g. Al are deposited on the exposed Si substrate and the photoresist layer (III). The semiconductor substrate is immersed ina photoresist-stripping agent to remove the first and second photoresist layers. At the same time, the Al layer on the photoresist layer (III) and the SiO₂ film on the first photoresist layer (I) are removed, so that an electrode wiring pattern is formed.

-28- (WPAT)

AN - 73-46974U/33 (46974U)
 TI - Semiconductor integrated circuit mfr - having multilayer interconnections of metal and insulating material
 DC - L03 R46 U12
 PA - (NIDE) NIPPON ELECTRIC CO LTD
 NP - 1
 PN - J73026680-B 00.01.00 (7333) {JP}
 PR - 69.10.21 69JP-084037
 IC - H01L-000/00
 AB - Etching of an Al metal wiring layer is prevented by forming a Si layer between the Al metal wiring layer and a Si oxide layer. E.g., a semiconductor element e.g., a diode having a P and an N type region, is formed in an N type epitaxial layer deposited on a P type Si substrate. an insulating layer is selectively formed over the Si wafer except for windows for leading electrodes. An Al layer is deposited over the insulating layer and the windows. After a photoresists is deposited on the Al layer, except for Al metal portions, a Si film having a low resistivity is deposited on the photoresist layer and the Al metal wiring portions. The Si film is then selectively removed, except for the Al metal wiring portions. The al layer and the Si film on the metal wiring portion are then oxidised to silicon oxide, and alumina respectively, but anodic oxidn. A silicon oxide layer is then deposited on the alumina. The silicon oxide layers at a through-hole portion are etched with an etching soln. A second Al layer for wiring is then deposited on the through-hole portion and the silicon oxide layer.

SS 36?
 his

SS 1: TEOS OR TETRAORTHASILICAT: OR TETRAORTHOSILI: (92)
 SS 2: SIO# OR (SILICON: OR SI OR POLY OR POLYSI OR POLYSILICON:) (3W) (OXIDE: OR DIOXIDE:) (67253)
 SS 3: LIGHT: OR UV OR U (W) V OR ULTRAVIOLET: OR ULTRA (2W) VIOLET: OR PHOTO: (491569)
 SS 4: MICROWAVE: OR PLASMA: OR RF: OR DC: OR ELECTROD: (364779)
 SS 5: CVD OR C (W) V (W) D OR DEPOSIT: OR COAT: (469233)
 SS 6: (LIQUID: OR SOLUTION: OR SOLN: OR AQUEOUS:) AND (GAS: OR VAPOR:) (102573)
 SS 7: (CARBON: OR CHLORINE: OR NITROGEN:) (3W) (OXIDE: OR MONOXIDE: OR DIOXIDE:) (40003)
 SS 8: CO OR NO OR CO₂ OR NO₂ OR CLO OR CLO₂ (2679362)
 SS 9: 2 AND 3 AND 4 AND 5 (641)
 SS 10: 1 AND 9 (0)
 SS 11: 6 AND 1 AND 2 (2)
 SS 12: 9 AND 8 (326)
 SS 13: 9 AND 7 (1)
 SS 14: 9 AND (SIMULTAN: OR SEQUENT: OR FIRST: OR SECOND: OR STEP:) (250)
 SS 15: 9 AND (AL OR ALCUSI OR ALSI OR ALCU OR ALUMINUM:) (146)
 SS 16: 14 AND 15 (47)
 SS 17: SS 9 AND 65-85 (370)

SS 18: SS 9 AND 86-87 (86)
 SS 19: SS 12 AND SS 17 (99)
 SS 20: SS 12 AND SS 18 (81)
 SS 21: SS 14 AND 17 (133)
 SS 22: SS 14 AND SS 18 (40)
 SS 23: SS 14 AND SS 17 (133)
 SS 24: SS 15 AND SS 17 (100)
 SS 25: SS 15 AND SS 18 (11)
 SS 26: SS 16 AND SS 17 (31)
 SS 27: SS 16 AND SS 18 (4)
 SS 28: SS 25 OR SS 27 (11)
 SS 29: SS 5 (10W) (SIMULTAN: OR SEQUEN: OR FIRST: OR SECOND: OR STEP:
) (18071)
 SS 30: (SS 3 (10W) SS 5) AND (SS 4 (10W) SS 5) (883)
 SS 31: SS 9 AND 65-87 (456)
 SS 32: SS 29 AND SS 31 (58)
 SS 33: SS 30 AND SS 31 (51)
 SS 34: SS 32 OR SS 33 AND NOT SS 28 (95)
 SS 35: SS 34 AND SS 15 (28)

SS 36?
 ss 9 and (ss 2 (8w) (c or carbon:)) and 65-87

*SEARCHING.....

OCCURS	TERM
913814	C
320720	CARBON:

SS 36 RESULT (17)

SS 37?
 ss 36 not (ss 28 or ss 35)

SS 37 RESULT (15)

SS 38?
 prt fu 15

-1- (WPAT)
 AN - 87-314869/45
 XRAM- C87-133868
 XRPX- N87-235656
 TI - Optimised CMOS FET prodn. in VLSI technology by conventional stages -
 without greatly increasing cost of masking to uncouple transistors
 DC - L03 U11 U13 R46
 AW - COMPLEMENTARY METAL OXIDE SEMICONDUCTOR FIELD EFFECT SCALE INTEGRATE
 CIRCUIT
 PA - (SIEI) SIEMENS AG
 IN - MULLER W
 NP - 5
 NC - 9
 PN - EP-244607-A 87.11.11 (8745) 8p G
 JP62242358-A 87.10.22 (8748)
 US4760033-A 88.07.26 (8832) 6p E
 CA1268862-A 90.05.08 (9025) E
 EP-244607-B1 93.06.09 (9323) 14p E H01L-021/82
 LA - G; E
 DS - AT DE FR GB IT NL
 CT - (G)EP-169600 J57138182 2.Jnl.Ref

PR - 86.04.08 86DE-611797
AP - 87.03.19 87EP-104024 87.04.03 87JP-082759 87.03.04 87US-021795
IC - H01L-021/82 H01L-029/08 H01L-027/08
AB - (EP-244607)

Masking for the individual ion implantations is carried out with photoresists and/or Si oxide or Si nitride structures and the gate electrodes are provided with spacer oxide to prevent under-diffusion of the implanted source/drain zones under the gate area.

The novel features are (a) deposition of SiO₂ film in a thickness rising continuously from the spacer oxide width of the gate of the future p-channel which each layer is formed in separate reaction chamber at least 1 being formed by photo-decomposition

-4- (WPAT)

TI - Transparent can for food storage - with silicon oxide layer on biaxially oriented polypropylene may be heated in microwave oven

-5- (WPAT)

TI - Nonlinear voltage-dependent resistor - with high resistance side layer contg. silicon, antimony, bismuth and lithium

-6- (WPAT)

TI - Plasma etching thick photoresist - for vertical, opt. undercut walls, at low frequency with controlled press. and active species concn.

-7- (WPAT)

TI - Electroplating adherent nickel on silicon - in bath of nickel chloride and ionisable fluoride

-8- (WPAT)

TI - Insulated gate field effect transistor-type ion conc. sensor - comprises gate insulation film of silica with silicon nitride or alumina layer and inorganic layer adhered to ion exchange resin

-9- (WPAT)

TI - Inexpensive optical glass waveguide fibre - using doped silica core of high refractive index, and outer layer of doped silica with lower refractive index

-10- (WPAT)

TI - Plasma etching polycrystalline silicon film - formed on silicon single crystal substrate coated with silicon oxide, using carbon tetra:fluoride plasma gas

-11- (WPAT)

TI - MNOS memory circuit prodn. - giving controlled memory threshold and no leakage or depletion mode switching

-12- (WPAT)

TI - Prod. of semiconductor device with metal bump - with contamination avoided by use of dry-etching esp. plasma or ion etching

-13- (WPAT)

TI - Microwave device yttrium iron garnet discs prodn. - by epitaxial growth of thin yttrium iron garnet film doped with lanthanum

-14- (WPAT)

TI - LED array with diffused junctions - formed from semiconductor contg. zinc doped gallium

-15- (WPAT)

TI - Multilayer electrode wiring for int circuits - free of irregularities and projections

SS 38?

prt ti 1-3

-1- (WPAT)

TI - Optimised CMOS FET prodn. in VLSI technology by conventional stages - without greatly increasing cost of masking to uncouple transistors

-2- (WPAT)

TI - Stereo voice transmitting system - enables use in path of low transmitting speed NoAbstract Dwg 2/4

-3- (WPAT)

TI - Prodn. of multilayer laminated film comprising thin amorphous layers - in which each layer is formed in separate reaction chamber at least 1 being formed by photo-decomposition

SS 38?

prt ti -15

-15- (WPAT)

TI - Multilayer electrode wiring for int circuits - free of irregularities and projections

SS 38?

prt fu 8-9,15

-8- (WPAT)

AN - 81-59624D/33 (59624D)

XRAM- C81-D59624

TI - Insulated gate field effect transistor-type ion concn. sensor - comprises gate insulation film of silica with silicon nitride or alumina layer and inorganic layer adhered to ion exchange resin

DC - A89 J04 L03 R16 R46

PA - (KURS) KURARAY KK

NP - 2

PN - J56079245-A 81.06.29 (8133) {JP}

J86038821-B 86.09.01 (8639) {JP}

PR - 79.12.03 79JP-157251

AP - 79.12.03 79JP-157251

IC - G01N-027/30 H01L-029/78

AB - (J56079245)

IGFET (insulated gate field effect transistor)-type ion sensor of which gate-insulating film is used to measure ion concn. (e.g. Na⁺, Ca²⁺, etc.) in the electrolytic soln. in direct contact, has (1) the gate-insulating film is composed of (a) silicon oxide layer, (b) silicon nitride (or aluminium oxide) layer, (c) inorganic layer and (d) organic layer (esp. organic layer having functionality capable of selective ion-exchange with a solute in the electrolytic soln.), and (2) the organic-layer-side of inorganic layer has a rough surface.

The IGFET-type ion sensor has improved durability because of the improved adhesion between the ion-exchange organic layer and the inorganic layers of gate-insulating film. In an example, SiO₂-insulated gate of a FET was coated with silicon nitride by chemical vapour

deposition technique. The gate was then coated with sputtered low-temp.-melting glass (thickness of about 5000 angstroms). After etching with 0.5 wt.% aq. HF for less than 1 minute, a 3000 angstrom-thick poly(chloromethylstyrene) film was formed by photopolymerisation. The resulting FET electrode exhibited a pH sensitivity of 4 mV/pH. (4pp)

-9- (WPAT)

AN - 81-34692D/20 (34692D)

XRAM- C81-D34692

TI - Inexpensive optical glass waveguide fibre - using doped silica core of high refractive index, and outer layer of doped silica with lower refractive index

DC - L01 V07 P81

PA - (NITE) NIPPON TELEG & TELEPH; (SUME) SUMITOMI ELEC IND LTD

IN - EDAHIRO T, KUROSAKI S, WATANABE M

NP - 9

PN - DE3040188-A 81.05.07 (8120)

GB2065633-A 81.07.01 (8127)

J56062204-A 81.05.28 (8129) {JP}

J56121002-A 81.09.22 (8145) {JP}

CA1136911-A 82.12.07 (8302)

GB2065633-B 84.03.21 (8412)

DE3040188-C 84.08.23 (8435)

US4975102-A 90.12.04 (9051)

US5033815-A 91.07.23 (9132)

LA - E

PR - 80.02.28 80JP-023359 79.10.25 79JP-137012

AP - 80.10.22 80GB-034027 80.10.24 80DE-040188 88.10.19 88US-262095
90.04.27 90US-523680

IC - C03B-037/07 C03C-013/00 C03C-017/02 G02B-005/14 C03C-003/30 C03C-025/02
G02B-006/00

AB - (DE3040188)

Fibre has a core zone (11) with high refractive index (RI), and based on SiO₂ contg. GeO₂, As₂O₃, Sb₂O₅, SnO₂, SiO₂, PbO and/or Bi₂O₃; an outer zone (12), with a lower RI, and based on SiO₂ contg. B₂O₃, F and/or P₂O₅; plus an outer sheath (12) of SiO₂ and/or SiO₂ glass contg. Al₂O₃, TiO₂, ZrO₂ and/or HfO₂. Core (11) pref. consists of SiO₂ contg. GeO₂ or Sb₂O₃.

The fibre is pref. drawn from a blank, using axial and external CVD to make layer (11) first, and then coating the latter with layers (12,13). Alternatively a glass tube (13) may be coated internally by CVD with layer (12), and then with layer (11) to make a blank.

Used for mfr. of low cost fibres with attenuation below 10 dB/km.

-15- (WPAT)

AN - 74-70363V/40 (70363V)

TI - Multilayer electrode wiring for int circuits - free of irregularities and projections

DC - L03 R46 R59 U12 V04

PA - (TOKE) TOKYO SHIBAURA ELEC CO

NP - 1

PN - J74033232-B 74.09.05 (7440) {JP}

PR - 70.12.29 70JP-120696

IC - H01L-019/00 H05K-003/00

AB - A silicon substrate is coated with SiO₂ layer provided with windows for collector, base and emitter regions. A multilayer structure is produced on the SiO₂ comprising in sequence (1) 1 μ Al as wiring electrode, (2) 500 angstroms SiO₂ deposited at <150 degrees C, with the electrode pattern produced by photoetching, (3) phosphorus-glass layer having a window, (4) second Al wiring electrode, (5) SiO₂ layer, and (6) final

phosphorus-glass passivating layer.

SS 38?
save etch

REPLACE OLD ETCH? ENTER YES OR A NEW SEARCHNAME.
yes

SAVE ETCH COMPLETED.
SS 38?
file inspec

ELAPSED TIME ON WPAT: 0.90 HRS.
\$107.10 EST COST CONNECT TIME.
\$70.40 EST COST ONLINE PRTS: 88
\$177.50 EST TOTAL COST THIS WPAT SESSION.

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COVERS FROM 1977 THRU WEEKLY UPDATE (9332)
SEE FILE INBK FOR COVERAGE FROM 1969 THROUGH 1976.

SS 1?
recall etch

*SEARCHING.....

*SEARCHING.....

OCCURS	TERM
318	TEOS
0	TETRAORTHASILICAT:
1	TETRAORTHOSILI:
34944	SIO#
124306	SILICON:
120377	SI
12571	POLY
117	POLYSI
4771	POLYSILICON:
65702	OXIDE:
9925	DIOXIDE:
194227	LIGHT:
30403	UV
33865	ULTRAVIOLET:
393343	PHOTO:
55700	U
190558	V
10433	ULTRA
1552	VIOLET:
69867	MICROWAVE:
135658	PLASMA:
32314	RF:
73239	DC:
66325	ELECTROD:
11432	CVD
103748	DEPOSIT:
67287	COAT:
366271	C
190558	V
189718	D

158519 LIQUID:
 319305 SOLUTION:
 46 SOLN:
 14756 AQUEOUS:
 188808 GAS:
 37190 VAPOR:
 75528 CARBON:
 6571 CHLORINE:
 36943 NITROGEN:
 65702 OXIDE:
 3540 MONOXIDE:
 9925 DIOXIDE:
 92428 CO
 333227 NO
 94 CO2
 17 NO2
 1826 CLO
 0 CLO2
 61144 SIMULTAN:
 21436 SEQUENT:
 275112 FIRST:
 209577 SECOND:
 98697 STEP:
 120317 AL
 33 ALCUSI
 414 ALSI
 268 ALCU
 15573 ALUMINUM:
 61144 SIMULTAN:
 89730 SEQUEN:
 275112 FIRST:
 209577 SECOND:
 98697 STEP:
 366271 C
 75528 CARBON:

SS 1: TEOS OR TETRAORTHASILICAT: OR TETRAORTHOSILI: (319)
 SS 2: SIO# OR (SILICON: OR SI OR POLY OR POLYSI OR POLYSILICON:) (3W) (OXIDE: OR DIOXIDE:) (36755)
 SS 3: LIGHT: OR UV OR U (W) V OR ULTRAVIOLET: OR ULTRA (2W) VIOLET: OR PHOTO: (416171)
 SS 4: MICROWAVE: OR PLASMA: OR RF: OR DC: OR ELECTROD: (310209)
 SS 5: CVD OR C (W) V (W) D OR DEPOSIT: OR COAT: (111748)
 SS 6: (LIQUID: OR SOLUTION: OR SOLN: OR AQUEOUS:) AND (GAS: OR VAPOR:) (28888)
 SS 7: (CARBON: OR CHLORINE: OR NITROGEN:) (3W) (OXIDE: OR MONOXIDE: OR DIOXIDE:) (7424)
 SS 8: CO OR NO OR CO2 OR NO2 OR CLO OR CLO2 (416643)
 SS 9: 2 AND 3 AND 4 AND 5 (525)
 SS 10: 1 AND 9 (9)
 SS 11: 6 AND 1 AND 2 (13)
 SS 12: 9 AND 8 (93)
 SS 13: 9 AND 7 (2)
 SS 14: 9 AND (SIMULTAN: OR SEQUENT: OR FIRST: OR SECOND: OR STEP:) (119)
 SS 15: 9 AND (AL OR ALCUSI OR ALSI OR ALCU OR ALUMINUM:) (86)
 SS 16: 14 AND 15 (20)
 SS 17: 9 AND 65-85 (136)
 SS 18: 9 AND 86-87 (66)
 SS 19: 12 AND 17 (19)
 SS 20: 12 AND 18 (5)
 SS 21: 14 AND 17 (27)

SS 22: 14 AND 18 (11)
 SS 23: 14 AND 17 (27)
 SS 24: 15 AND 17 (22)
 SS 25: 15 AND 18 (9)
 SS 26: 16 AND 17 (3)
 SS 27: 16 AND 18 (1)
 SS 28: 25 OR 27 (9)
 SS 29: 5 (10W) (SIMULTAN: OR SEQUEN: OR FIRST: OR SECOND: OR STEP:) (2311)
 SS 30: (3 (10W) 5) AND (4 (10W) 5) (374)
 SS 31: 9 AND 65-87 (202)
 SS 32: 29 AND 31 (5)
 SS 33: 30 AND 31 (15)
 SS 34: 32 OR 33 AND NOT 28 (18)
 SS 35: 34 AND 15 (1)
 SS 36: 9 AND (2 (8W) (C OR CARBON:)) AND 65-87 (7)
 SS 37: 36 AND NOT (28 OR 35) (7)

SS 38?
 prt ti 7

- 1- (INSC)
 TI - The InP-SiO/sub 2/ interface: electron tunneling into oxide traps (Las Vegas, NV, USA, 14-17 Oct. 1985)
- 2- (INSC)
 TI - Heating silicon dioxide at 950-1050 degrees C in the presence of an NH/sub 3/+CF/sub 4/ plasma {IN J. Appl. Phys. (USA)}
- 3- (INSC)
 TI - Profile control in plasma etching of SiO/sub 2/ {IN Solid State Technol. (USA)}
- 4- (INSC)
 TI - Plasma enhanced beam deposition of thin films at low temperatures {IN J. Vac. Sci. & Technol. B (USA)}
- 5- (INSC)
 TI - Electronic properties of doped amorphous SiO/sub x/ {IN Fourth E.C. Photovoltaic Solar Energy Conference. Proceedings of the International Conference, Stresa, Italy, 10-14 May 1982}
- 6- (INSC)
 TI - Detection of pinholes in RF Diode-sputtered SiO/sub 2/ films {IN Thin Solid Films (Switzerland), Fifth International Thin Films Congress, Herzlia-on-Sea, Israel, 21-25 Sept. 1981}
- 7- (INSC)
 TI - CVD silicon oxide below 100 degrees C utilizing photochemical combustion of SiH/sub 4/ and O/sub 2/ {IN 1981 Symposium on VLSI Technology. Digest of Technical Papers, Maui, HI, USA, 9-11 Sept. 1981}

SS 38?
 prt fu 4-5,7

- 4- (INSC)
 AN - A84035582; B84013382
 TI - Plasma enhanced beam deposition of thin films at low temperatures {IN J. Vac. Sci. & Technol. B (USA)}

- AU - Chang, R.P.H.; Darack, S.; Lane, E.; Chang, C.C.; Allara, D.; Ong, E.
 OS - Bell Labs., Murray Hill, NJ, USA
 SO - J. Vac. Sci. & Technol. B (USA), vol.1, no.4, PP.935-42, Oct.-Dec. 1983, 13 REF.
 JC - JVTBD9
 CN - 0734-211X/83/040935-08 \$01.00
 DT - J (JOURNAL PAPER)
 NU - ISSN 0734211X
 CC - *A8115J; A6855; *B0520F; B2550E
 TC - ND (NEW DEVELOPMENTS); PR (PRACTICAL); EX (EXPERIMENTAL)
 IT - alumina; insulating thin films; plasma deposition; silicon compounds
 ST - SiO/sub x/N/sub y/; capacitance hysteresis; insulating films; atomic beams; thin films; low temperatures; plasma enhanced beam deposition; amorphous layers; molecular beams; SiO/sub 2/; Al/sub 2/O/sub 3/; ZrO/sub 3/; NbN; thickness; composition; optical monitoring; electrostatic breakdown field strength; fixed charge density; photoresist masked substrates; lift-off
- AB - A plasma enhanced beam deposition technique for thin films is discussed. It is shown that thin films of tailored stoichiometry or amorphous layers can be easily deposited in the temperature range (30-250 degrees C). The technique uses a combination of active atomic or molecular beams generated by charged particles or photons. Films of SiO/sub 2/, Al/sub 2/O/sub 3/, ZrO/sub 3/, silicon oxynitride, NbN, etc., have been deposited on metals, semiconductors, and insulators. The interfaces between the deposited films and the substrates are extremely sharp and no native growth of oxides of nitrides occurred on the substrate surfaces during film deposition. Film thickness and composition can be precisely controlled by optical monitoring techniques. For instance, the physical properties of the deposited SiO/sub 2/ at 100 degrees C is nearly identical to that of thermal oxides grown on Si at 1100 degrees C. The deposited SiO/sub 2/ has an electrostatic breakdown field strength of about 5×10^6 V/cm, and 1 MHz C-V curves show a hysteresis of 50 mV at a sweep rate of 100 mV/s. The fixed charge density is 3.5×10^{11} cm/sup -2/. The advantages of this process for depositing Al/sub 2/O/sub 3/ on InP, GaAs, and Si are discussed. Utilizing the low temperature nature of the technique, patterns of μ -width SiO/sub 2/ features have been made using photoresist masked substrates and the lift-off technique. Finally, it is proposed that epitaxial growth of compound films should also be poss
- 5- (INSC)
 AN - A83062521
 TI - Electronic properties of doped amorphous SiO/sub x/ (IN Fourth E.C. Photovoltaic Solar Energy Conference. Proceedings of the International Conference, Stresa, Italy, 10-14 May 1982)
 AU - Holzenkampfer, E.; Stuke, J.; Fischer, R.; Bloss, W.H., ED.; Grassi, G., ED.
 OS - Fachbereich Phys., Univ. Marburg, Marburg, Germany
 SO - Reidel, Dordrecht, Netherlands, xxxiv+1102 PP., PP.778-82, 1982, 6 REF.
 DT - PA (CONFERENCE PAPER)
 NU - ISBN 9027714630
 CC - *A7360H; A7240; A8115J
 TC - EX (EXPERIMENTAL)
 IT - amorphous state; energy gap; hydrogen; insulating thin films; photoconductivity; plasma deposited coatings; silicon compounds
 ST - amorphous SiO/sub x/:H; glow discharge; band gap; dark conductivity
 AB - Films of a-SiO/sub x/:H ($0 \leq x \leq 1$) were prepared in a glow discharge of SiH/sub 4/-N/sub 2/O-mixtures. It is found that the band gap widens at a rate $dE/dx = 1$ eV. For fixed oxygen content, the band gap shrinks upon doping. This effect sets in at about 10^{13}

- 1- (INSC)
TI - Evaluation of sol-gel processing as a method for fabricating spherical-shell silica aerogel inertial confinement fusion targets {IN J. Vac. Sci. Technol. A, Vac. Surf. Films (USA), 38th National Symposium of the American Vacuum Society, Seattle, WA, USA, 11-15 Nov. 1991}
- 2- (INSC)
TI - Surface modification of base materials for TEOS/O/sub 3/ atmospheric pressure chemical vapor deposition {IN J. Electrochem. Soc. (USA)}
- 3- (INSC)
TI - Improved sub-micron inter-metal dielectric gap-filling using TEOS/Ozone APCVD {IN Microelectron. Manuf. Technol. (USA)}
- 4- (INSC)
TI - ArF laser induced CVD of SiO/sub 2/ films: a search for the best suitable precursors {IN Appl. Surf. Sci. (Netherlands), Laser Surface Processing and Characterization. Symposium E of the 1991 E-MRS Spring Conference, Strasbourg, France, 28-31 May 1991}
- 5- (INSC)
TI - Doped silicon oxide deposition by atmospheric pressure and low temperature chemical vapor deposition using tetraethoxysilane and ozone {IN J. Electrochem. Soc. (USA)}

- 6- (INSC)
- TI - Selecting an organosilicon source for LPCVD oxide {IN Semicond. Int. (USA)}
- 7- (INSC)
- TI - Energetics of high surface area silicas {IN J. Non-Cryst. Solids (Netherlands), Tenth University Conference on Glass Science, University Park, PA, USA, 7-9 June 1989}
- 8- (INSC)
- TI - The LPCVD of silicon oxide films below 400 degrees C from liquid sources {IN J. Electrochem. Soc. (USA)}
- 9- (INSC)
- TI - LPCVD of SiO₂ films using the new source material DADBS {IN Proceedings of the Tenth International Conference on Chemical Vapor Deposition 1987, Honolulu, HI, USA, Oct. 1987}
- 10- (INSC)
- TI - Crystallization of lithium aluminosilicate gels {IN J. Non-Cryst. Solids (Netherlands), Stability of Glass: Ninth University Conference on Glass Science, Troy, NY, USA, 12-14 Aug. 1987}
- 11- (INSC)
- TI - Low pressure chemical vapor deposition of borophosphosilicate glass films produced by injection of miscible DADBS-TMB-TMP liquid sources
- 12- (INSC)
- TI - Sol-gel transition in simple silicates. II {IN J. Non-Cryst. Solids (Netherlands), Proceedings of the Second International Workshop on Glasses and Glass Ceramics from Gels, Wurzburg, Germany, 1-2 July 1983}
- 13- (INSC)
- TI - Masking effects of antimony diffusion in silicon from a doped oxide source {IN Jap. J. Appl. Phys. (Japan)}

SS 38?

prt ss 11 fu 2-9,11-12

- 2- (INSC)
- AN - 4211186
- ABN - B9209-2550E-056
- TI - Surface modification of base materials for TEOS/O₂ atmospheric pressure chemical vapor deposition {IN J. Electrochem. Soc. (USA)}
- AU - Fujino, K.; Nishimoto, Y.; Tokumasu, N.; Maeda, K.
- OS - Semicond. Process Lab., Tokyo, Japan
- SO - J. Electrochem. Soc. (USA), vol.139, no.6, PP.1690-2, June 1992, 4 REF.
- JC - JESQAN
- DT - J (JOURNAL PAPER)
- NU - ISSN 00134651
- CC - *B2550E; B2570; B0520F
- TC - AP (APPLICATIONS); ND (NEW DEVELOPMENTS); PR (PRACTICAL); EX (EXPERIMENTAL)
- IT - chemical vapour deposition; integrated circuit technology; semiconductor technology
- ST - atmospheric pressure chemical vapor deposition; tetraethyloxysilane; step coverage; submicron device structures; deposition rate; thermal oxide surface; base material dependence; plasma treatment; surface

morphology; planarizing technology; very large scale integrated device fabrication; 250 degC; 350 degC; aqueous HF etch rate; SiO/sub 2/; Si; O/sub 3/

- SiO2/sur O2/sur Si/sur O/sur SiO2/bin O2/bin Si/bin O/bin; Si/sur Si/el; O3/el O/el; HF/bin F/bin H/bin
- temperature K=E02*5.23
- temperature K=E02*6.23

- Atmospheric pressure tetraethyloxysilane (TEOS)/O/sub 3/ chemically vapor deposited provides excellent step coverage for submicron device structures; however, the properties of the deposited films depend on the surface characteristics of the base materials being used. To illustrate this dependence, the deposition rate of nondoped silicon dioxide obtained on a thermal oxide surface is significantly lower than the deposition rate obtained on a bare silicon surface. A new method to eliminate this base material dependence involving plasma treatment has been investigated. The optimum treatment consists of exposing the base materials to a nitrogen plasma for 1 min while maintaining the base materials at 250 degrees C. Films deposited on thermal oxide base materials which have first been treated by this new method were found to have the same deposition rate, aqueous HF etch rate, and surface morphology as those films deposited on untreated bare silicon. In addition to a nitrogen plasma, oxygen and argon plasmas were studied and found to produce similar results when the base material temperature was raised to 350 degrees C. The elimination of base material dependence through the use of this new plasma treatment technique has resulted in higher integrity TEOS/O/sub 3/ oxides and has also expanded the range of applications for this unique planarizing technology for very large scale integrated device fabrication.

MF

NM

NM

AB

-5- (INSC)
AN - 4027001
ABN - A9201-8115H-012
TI - Doped silicon oxide deposition by atmospheric pressure and low
temperature chemical vapor deposition using tetraethoxysilane and ozone
{IN J. Electrochem. Soc. (USA)}
AU - Fujino, K.; Nishimoto, Y.; Tokumasu, N.; Maeda, K.
OS - Semicond. Process Lab., Tokyo, Japan
SO - J. Electrochem. Soc. (USA), vol.138, no.10, PP.3019-24, Oct. 1991, 13
REF.
JC - JESOAN
DT - J (JOURNAL PAPER)
NU - ISSN 00134651
CC - *A8115H; A6855; A7865J; A7830L

ST - low temperature CVD; tetraethoxysilane; ozone; glass; organic doping sources; trimethylphosphate; trimethylborate; doping level; film stress; etching rate; IR spectra; leakage current; deposition rate; partial gas-phase reaction; 400 degC; P/sub 2/O/sub 5/-SiO/sub 2/; B/sub 2/O/sub 3/-SiO/sub 2/

MF - P2O5SiO2/ss SiO2/ss O2/ss O5/ss P2/ss Si/ss O/ss P/ss; B2O3SiO2/ss B2O3/ss SiO2/ss B2/ss O2/ss O3/ss Si/ss B/ss O/ss

NM - temperature K=E02*6.73

AB - Doped silicon oxides, phosphosilicate glass (PSG), and borosilicate glass (BSG) films were deposited using organic doping sources, trimethylphosphate for PSG films, and trimethylborate (TMB) and SiOB for BSG films. Deposition rate, doping level, film stress, etching rate by an aqueous HF solution, IR spectra and leakage current of the films were studied. In PSG deposition, a P/sub 2/O/sub 5/ content up to 6 mole percent (m/o), a deposition rate of as high as 150 nm/min and a film stress of less than 1*10/sup 9/ dyne/cm/sup 2/ were obtained at 400 degrees C. IR spectra showed that the PSG films were very stable even after boiling in water. Step coverage on aluminum steps was conformal or slightly nonconformal, and base material dependence of deposition rate was not observed, which would indicate a partial gas-phase reaction even in TEOS/O/sub 3/ atmospheric pressure chemical vapor deposition. The extent of the nonconformality was much smaller than that of the silane-base PSG films. In BSG deposition a 200 nm/min deposition rate, a 1*10/sup 9/ dyne/cm/sup 2/ film stress and a 14 m/o doping level were obtained at 400 degrees C. The stress of films deposited at 400 degrees C relaxed from tensile to compressive, 0.2*10/sup 9/ dyne/cm/sup 2/. Leakage current of TMB/BSG films was very low, 15 nA/cm/sup 2/, without annealing independent of doping level. Step coverage of both films was very conformal, however, base material dependence of deposition rate was observed. Both phenomena are the same as the USG case, but different from the PSG deposition. IR spectra of both films proved that the films were acceptably stable several days after deposition.

MF
AB

- silicas; energetics; structure; amorphous silicas; low pressure chemical vapor deposition; flame hydrolysis; high temperature transposed temperature drop calorimetry; solution calorimetry; thermodynamic cycles; total stored energy; fused silica glass; 3-fold rings; pore collapse; 2-fold rings; LPCVD film; metastability; siloxane bonds; sol-gel process; SiO/sub 2/
- SiO₂/sur Si/sur O/sur SiO₂/bin O₂/bin Si/bin O/bin
- The energetics and structure of high surface area, amorphous silicas prepared by low pressure chemical vapor deposition (LPCVD), flame hydrolysis and sol-gel were studied by high temperature transposed temperature drop calorimetry and solution calorimetry. Utilizing appropriate thermodynamic cycles, the total stored energy (measured as 'fast' energy release during drop experiments and as 'slow' energy release during solution experiments) of impurity free amorphous silicas relative to fused silica glass was determined. The 'fast' energy release involves the healing of point defects, reduction of surface area, release of strain, rearrangement of 2- and 3-fold rings by pore collapse or annealing of 2-fold rings (in conjunction with an appropriate concentration of 3- and 4-fold rings). The 'slow' energy release reflects differences in the distribution of 3-fold and higher rings in annealed silica relative to fused silica glass. LPCVD film silicas had been deposited at 0.4 Torr pressure by the reaction of SiH/sub 4/ and excess O/sub 2/ and 523, 643 and 703 K. The total stored energy of 22 to 44 kJ/mol is mainly due to the pressure of 2- and 3-fold rings, consistent with Raman and infrared spectra of films and diffraction studies on related 'snows'. The metastability of the LPCVD films decreases with increasing temperature of deposition due to the increased capacity to anneal metastable siloxane bonds. This trend continues to higher temperatures. An amorphous silica prepared by flame hydrolysis at 1073 K by the combustion of SiCl/sub 4/ in O/sub 2/ shows little or no stored

energy and is energetically almost identical to fused silica glass. Acid- (pH approximately 1) and base- (pH approximately 11) catalyzed dry silica gels were prepared by mixing TEOS:ethanol:water in molar proportion 1:4:4, then aged at 333 K for 24 h and dried at 423 K for 2-3 days. 'Fast' energy release accounts for most of the total stored energy of 7.3 kJ/mol for acid-catalyzed and 66.2 kJ/mol for base-catalyzed dry silica gel. It is unlikely that high concentrations of 2- and 3-fold rings persist in contact with the aqueous medium during the sol-gel process. Therefore, the total stored energy arises predominantly from structural relaxation and rearrangement in the base-catalyzed gel and rearrangement of surface siloxane by pore collapse during volatile loss in the acid-catalyzed gel. The creation of metastable siloxanes from the rapid condensation of monomers (present due to the high solubility of silica in the basic solution) during the drying of the base-catalyzed gel may be the source of its extremely large metastability.

-8- (INSC)

AN - A89122513; B89067393

TI - The LPCVD of silicon oxide films below 400 degrees C from liquid sources {IN J. Electrochem. Soc. (USA)}

AU - Hochberg, A.K.; O'Meara, D.L.

OS - J.C. Schumacher Co., Carlsbad, CA, USA

SO - J. Electrochem. Soc. (USA), vol.136, no.6, PP.1843-4, June 1989, 4 REF.

JC - JESOAN

DT - J (JOURNAL PAPER)

NU - ISSN 00134651

CC - *A8115H; A6855; *B0520F; B2550

TC - EX (EXPERIMENTAL)

IT - chemical vapour deposition; insulating thin films; integrated circuit technology; semiconductor technology; silicon compounds

ST - LPCVD; liquid sources; chemical vapor deposition; lower temperature oxide precursors; source material; 400 degC; SiO/sub 2/ films

MF - SiO2/bin O2/bin Si/bin O/bin

NM - temperature K=E02*6.73

AB - New chemical vapor deposition sources for silicon oxide films are needed to meet the stringent demands of advanced VLSI integrated circuit designs. The silane low temperature oxide (LTO) process produces non-conformal films and has a high potential for homogeneous nucleation of SiO/sub 2/ which adversely affects film quality. In addition, SiH/sub 4/ is a toxic, pyrophoric, potentially explosive gas which requires expensive installations to meet new safety standards. Highly conformal, good quality SiO/sub 2/ films have been obtained from tetraethoxysilane, TEOS, by LPCVD. This deposition occurs at temperatures above 650 degrees C, preventing its use over aluminum and many silicides. Also, the lower vapor pressure of TEOS necessitates the use of a relatively complex delivery system compared with gaseous sources. In a search for lower temperature oxide precursors, several classes of compounds, such as alkoxy- and alkylsilanes and cyclic siloxanes, have been studied with favourable results. The following is a report on the identification of a new SiO/sub 2/ source material which deposits high quality, conformal oxide films below 400 degrees C with the safety of TEOS and the ease of delivery of a gas. The deposition studies were performed in a hot-wall, horizontal LPCVD reactor with controlled silicon source mass flow.

-9- (INSC)

AN - A89009125; B89000681

TI - LPCVD of SiO/sub 2/ films using the new source material DADBS {IN Proceedings of the Tenth International Conference on Chemical Vapor Deposition 1987, Honolulu, HI, USA, Oct. 1987}

AU - Smolinsky, G.; Cullen, G.W., ED.; Blocher, J.M., Jr., ED.

OS - AT&T Bell Labs., Murray Hill, NJ, USA; Electrochem. Soc. Japan; Japan Soc. Appl. Phys

SO - Proceedings of the Tenth International Conference on Chemical Vapor Deposition 1987, Electrochem. Soc, xvi+1269 PP., PP.490-6, 1987, 5 REF.

DT - PA (CONFERENCE PAPER)

CC - *A8115H; A6855; A7960E; A7865J; A7820D; A7360H; *B0520F

TC - AP (APPLICATIONS); EX (EXPERIMENTAL)

IT - chemical vapour deposition; insulating thin films; internal stresses; refractive index; silicon compounds; X-ray photoelectron spectra

ST - LPCVD; diacetoxypolydimethylsiloxane; infrared spectrum; molecular composition; XPS; tensile intrinsic stress; leakage currents; wet-etching rates; 410 to 600 degC; SiO₂/Si films

MF - SiO₂/int O₂/int Si/int O/int SiO₂/bin O₂/bin Si/bin O/bin

NM - temperature K=E02*6.83 to K=E02*8.73

AB - Diacetoxypolydimethylsiloxane, DADBS, is a chemical cousin of the better known source TEOS. DADBS deposits high quality SiO₂ in the temperature range 410 to 600 degrees C at a rate of from approximately 20 to >200 Å/min, respectively. At the higher temperature the reactants are readily depleted resulting in a compromise in film uniformity across each wafer and from wafer-to-wafer. The index of refraction of DADBS-oxide is 1.44; the infrared spectrum shows the presence of Si-OH groups, otherwise it is very much like that of thermally grown SiO₂; the molecular composition as determined by XPS is SiO₂. Micron-size features are conformally coated at 500 degrees C and nearly so at 575 degrees C. The tensile intrinsic stress of the oxide in approximately 1 µm thick films is approximately 3.5*10⁹ dyn/cm² and is somewhat less when doped with phosphorus. The room-temperature stress is lower and for P-DADBS-oxide is slightly compressive. Both undoped and doped oxide (200 to 1000 Å) withstand electric fields of the order of 11 MV/cm and exhibit leakage currents of approximately 10⁻¹³ A at a field of 1 MV/cm. The wet-etching rates of the oxide in various HF solutions is given in Table II.

-11- (INSC)

AN - A88015528; B88006497

TI - Low pressure chemical vapor deposition of borophosphosilicate glass films produced by injection of miscible DADBS-TMB-TMP liquid sources

AU - Levy, R.A.; Gallagher, P.K.; Schrey, F.

OS - AT&T Bell Labs., Murray Hill, NJ, USA

SO - J. Electrochem. Soc. (USA), vol.134, no.7, PP.1744-9, July 1987, 18 REF.

JC - JESQAN

DT - J (JOURNAL PAPER)

NU - ISSN 00134651

CC - *A8115H; A6855; *B0520F; B0570; B2550; B2570

TC - EX (EXPERIMENTAL)

IT - borosilicate glasses; chemical vapour deposition; integrated circuit technology; phosphosilicate glasses; semiconductor technology

ST - low pressure CVD; injection; borophosphosilicate glass films; miscible DADBS-TMB-TMP liquid sources; liquid precursors; tetraethylorthosilicate; depletion effects; diacetoxypolydimethylsiloxane; deposition temperature; thickness; composition; isothermal zone; compositional uniformity; conformal step coverage; flow profiles; B₂O₃/SiO₂/P₂O₅

MF - B2O3P2O5SiO2/ss B2O3/ss P2O5/ss SiO2/ss B2/ss O2/ss O3/ss O5/ss P2/ss Si/ss B/ss O/ss P/ss

AB - This study is a follow-up of earlier work in which the concept of injecting miscible liquid precursors into an LPCVD reactor was implemented for the preparation of BPSG films from a mixture of tetraethylorthosilicate (TEOS), trimethylborate (TMB), and trimethylphosphite (TMP). The depletion effects encountered in the use of

TMP are circumvented here by the substitution of diacetoxysilane (DADBS) for TEOS. The choice of this less thermally stable SiO_2 precursor allows for a decrease in deposition temperature from approximately 700 degrees down to 500 degrees C. In this lower temperature regime, BPSG deposits are shown to be uniform in terms of both thickness and composition across a wide isothermal zone. Variations in the proportion of the liquid phase indicate that a solution consisting by volume of 44.3% DADBS, 48.2% TMB, and 7.5% TMP yield BPSG films close to the desired composition (i.e. 4 w/o B and 4 w/o P). Typical BPSG films produced by this process are shown to exhibit good compositional uniformity, perfectly conformal step coverage, and desirable flow profiles at temperatures and phosphorus concentrations significantly lower than previously achieved with phosphosilicate glass films.

-12- (INSC)

AN - A84057119

TI - Sol-gel transition in simple silicates. II (IN J. Non-Cryst. Solids (Netherlands), Proceedings of the Second International Workshop on Glasses and Glass Ceramics from Gels, Wurzburg, Germany, 1-2 July 1983)

AU - Brinker, C.J.; Keefer, K.D.; Schaefer, D.W.; Assink, R.A.; Kay, B.D.; Ashley, C.S.

OS - Sandia Nat. Labs., Albuquerque, NM, USA

SO - vol.63, no.1-2, PP.45-59, Feb. 1984, 15 REF.

JC - JNCSEJ

CN - 0022-3093/84/ \$03.00

DT - PA (CONFERENCE PAPER)

NU - ISSN 00223093

CC - *A8120; A8270G; A6470; A8230

TC - EX (EXPERIMENTAL)

IT - chemical reactions; chromatography; gels; materials preparation; phase transformations; proton magnetic resonance; silicon compounds; sols; X-ray diffraction examination of materials

ST - sol-gel transition; SiO_2 gels; alcoholic solutions; tetraethylorthosilicate; two-step hydrolysis process; small angle X-ray scattering; gas-liquid chromatography; ^1H NMR spectroscopy; unhydrolyzed monomers; dimers; chains; completely hydrolyzed polymers; acid system; gelation

AB - For pt.I see *ibid.*, vol.48, p.47 (1982). Silica gels were prepared from alcoholic solutions of tetraethylorthosilicate (TEOS) using a two-step hydrolysis process; small angle X-ray scattering (SAXS), gas-liquid chromatography, and ^1H NMR spectroscopy were employed to study their formation. The first step (1 mol. H_2O /mol. TEOS with HCl catalyst) resulted in a rather wide species distribution comprised of hydrolyzed and unhydrolyzed monomers, dimers, and chains. The second step (additional water plus acid or base) resulted in completely hydrolyzed polymers in the acid system which apparently were highly overlapped prior to gelation. In the base system, hydrolysis was incomplete due to unhydrolyzed monomer and the resulting polymers were more highly condensed (or collapsed) and discrete compared to the acid system. The formation of colloidal silica was not observed in either case.

SS 38?

his

SS 1: TEOS OR TETRAORTHOSILICATE: OR TETRAORTHOSILI: (319)

SS 2: SiO_2 OR (SILICON: OR SI OR POLY OR POLYSI OR POLYSILICON:) (3W) (OXIDE: OR DIOXIDE:) (36755)

SS 3: LIGHT: OR UV OR U (W) V OR ULTRAVIOLET: OR ULTRA (2W) VIOLET: OR PHOTO: (416171)

SS 4: MICROWAVE: OR PLASMA: OR RF: OR DC: OR ELECTROD: (310209)
 SS 5: CVD OR C (W) V (W) D OR DEPOSIT: OR COAT: (111748)
 SS 6: (LIQUID: OR SOLUTION: OR SOLN: OR AQUEOUS:) AND (GAS: OR VAPOR:
) (28888)
 SS 7: (CARBON: OR CHLORINE: OR NITROGEN:) (3W) (OXIDE: OR MONOXIDE: OR
 DIOXIDE:) (7424)
 SS 8: CO OR NO OR CO2 OR NO2 OR CLO OR CLO2 (416643)
 SS 9: 2 AND 3 AND 4 AND 5 (525)
 SS 10: 1 AND 9 (9)
 SS 11: 6 AND 1 AND 2 (13)
 SS 12: 9 AND 8 (93)
 SS 13: 9 AND 7 (2)
 SS 14: 9 AND (SIMULTAN: OR SEQUENT: OR FIRST: OR SECOND: OR STEP:) (119)
 SS 15: 9 AND (AL OR ALCUSI OR ALSI OR ALCU OR ALUMINUM:) (86)
 SS 16: 14 AND 15 (20)
 SS 17: 9 AND 65-85 (136)
 SS 18: 9 AND 86-87 (66)
 SS 19: 12 AND 17 (19)
 SS 20: 12 AND 18 (5)
 SS 21: 14 AND 17 (27)
 SS 22: 14 AND 18 (11)
 SS 23: 14 AND 17 (27)
 SS 24: 15 AND 17 (22)
 SS 25: 15 AND 18 (9)
 SS 26: 16 AND 17 (3)
 SS 27: 16 AND 18 (1)
 SS 28: 25 OR 27 (9)
 SS 29: 5 (10W) (SIMULTAN: OR SEQUEN: OR FIRST: OR SECOND: OR STEP:) (2311)
 SS 30: (3 (10W) 5) AND (4 (10W) 5) (374)
 SS 31: 9 AND 65-87 (202)
 SS 32: 29 AND 31 (5)
 SS 33: 30 AND 31 (15)
 SS 34: 32 OR 33 AND NOT 28 (18)
 SS 35: 34 AND 15 (1)
 SS 36: 9 AND (2 (8W) (C OR CARBON:)) AND 65-87 (7)
 SS 37: 36 AND NOT (28 OR 35) (7)
 SS 38?

ss 19 -ss 28

TERM (SS 19 -SS 28) NOT FOUND.

SS 38 RESULT (0)

SS 39?

ss 19 or ss 20 or ss 21 or ss 22 or ss 23 or ss 24 or ss 25 or ss 26 or ss 27 or

SS 39 RESULT (82)

SS 40?

ss 39 not ss 37

SS 40 RESULT (79)

SS 41?

prt ti 79

-1- (INSC)

TI - Contactless method of measuring the potential barrier at a dielectric-conductor interface

-2- (INSC)

TI - Photo CVD technology for interlevel dielectrics in submicron VLSIs {Santa Clara, CA, USA, 15-16 June 1987}

-3- (INSC)

TI - The effect of lightly doped aluminum on the magnitude of mobile charge in the oxide of an Si-SiO₂/Al system

-4- (INSC)

TI - The influence of various types of passivation on electromigration resistance of Al-Cu-Si convectors

-5- (INSC)

TI - Preparation of cerium-activated silica glasses: phosphorus and aluminum codoping effects on absorption and fluorescence properties

-6- (INSC)

TI - The effect of laser heating on optical properties of germania doped silica optical waveguides {London, England, 12 Dec. 1986}

-7- (INSC)

TI - Characterization of plasma-enhanced deposited silicon-(oxy)nitride layers: UV and IR transmission {Boston, MA, USA, 5-9 May 1986}

-8- (INSC)

TI - Interface state generation in the Si-SiO₂-system by nonionizing UV irradiation {Toulouse, France, 16-18 April 1985}

-9- (INSC)

TI - Breakdown mechanism and the nature of the on-state in sandwich structures with a tunnel dielectric

-10- (INSC)

TI - Chemical states study of Si in SiO_x films grown by PECVD {TRISA 85: Proceedings of the First American Vacuum Society Tri-State Symposium on Surface Analysis and Thin Film Technology, Oconomowoc, WI, USA, 30 April-3 May 1985}

- 11- (INSC)
TI - Intrinsic size effect of platinum particles supported on plasma-grown amorphous alumina in the hydrogenation of ethylene
- 12- (INSC)
TI - New mechanism for recording images in photorefractive crystals {IN Zh. Tekh. Fiz. (USSR)}
- 13- (INSC)
TI - Oxidation of Si by microwave-excited oxygen-plasma through protective Al coating {IN Jpn. J. Appl. Phys. Part 2 (Japan)}
- 14- (INSC)
TI - Photon-induced generation of interface states at the silicon nitride-thin oxide-silicon interface {IN Thin Solid Films (Switzerland)}
- 15- (INSC)
TI - Investigation of reactive-ion-etching-related fluorocarbon film deposition onto silicon and a new method for surface residue removal {IN J. Electrochem. Soc. (USA)}
- 16- (INSC)
TI - Photoelectronic properties of amorphous silicon/silicon oxide heterostructures {IN Materials Issues in Applications of Amorphous Silicon Technology, San Francisco, CA, USA, 15-17 April 1985}
- 17- (INSC)
TI - Improvement of the UV stability of MIS-inversion layer solar cells {IN Sixth E.C. Photovoltaic Solar Energy Conference, London, England, 15-19 April 1985}
- 18- (INSC)
TI - Fabrication methods for InGaAsP/GaAs visible laser structure with AlGaAs burying layers grown by liquid-phase epitaxy {IN J. Appl. Phys. (USA)}
- 19- (INSC)
TI - High flatness mask for step and repeat X-ray lithography {IN J. Vac. Sci. & Technol. B (USA), Proceedings of 29th International Symposium on Electron, Ion and Photon Beams, Portland, OR, USA, 28-31 May 1985}
- 20- (INSC)
TI - Chromium-oxygen films and solar absorbing selective surfaces {IN Vac. Sci. & Technol. (China)}
- 21- (INSC)
TI - Investigation of the scattering behaviour of sputtered optical coatings {IN IPAT 85. 5th International Conference on Ion and Plasma Assisted Techniques, Munich, Germany, 13-15 May 1985}
- 22- (INSC)
TI - Amorphous silicon solar cell on ceramic substrate {IN Conference Record of the Seventeenth IEEE Photovoltaic Specialists Conference - 1984 (Cat. No. 84CH2019-8), Kissimmee, FL, USA, 1-4 May 1984}
- 23- (INSC)
TI - Integral solar cell covers by plasma activated CVD {IN Conference Record of the Seventeenth IEEE Photovoltaic Specialists Conference - 1984 (Cat. No. 84CH2019-8), Kissimmee, FL, USA, 1-4 May 1984}

- 24- (INSC)
TI - RIE planarization process for magnetic bubble devices {IN IEEE Trans. Magn. (USA)}
- 25- (INSC)
TI - Structural damage produced in InP(100) surfaces by plasma-employing deposition techniques {IN J. Vac. Sci. & Technol. A (USA), Proceedings of the 31st National Symposium of the American Vacuum Society, Reno, NV, USA, 4-7 Dec. 1984}
- 26- (INSC)
TI - Photoelectronic properties of hydrogenated amorphous silicon/silicon oxide heterostructures {IN J. Appl. Phys. (USA)}
- 27- (INSC)
TI - Planarisation and via etching for step coverage in 5 μ m pitch CMOS multilevel metallization {IN 1984 Proceedings of the First International IEEE VLSI Multilevel Interconnection Conference (Cat. No. 84CH1992-2), New Orleans, LA, USA, 21-22 June 1984}
- 28- (INSC)
TI - Hydrogen evolution and iodine reduction on an illuminated n-p junction silicon electrode and its application to efficient solar photoelectrolysis of hydrogen iodide {IN J. Phys. Chem. (USA)}
- 29- (INSC)
TI - Proton-implanted stripe-geometry (Al,Ga)As lasers using SiO₂/sub 2/ masking {IN IEEE Trans. Electron Devices (USA)}
- 30- (INSC)
TI - Correlation between electron spin resonance, electrical conductivity and optical absorption edge of co-evaporated thin films of the dielectric system SiO₂/V/sub 2/O/sub 5/ {IN J. Mater. Sci. (GB)}
- 31- (INSC)
TI - Defect structures in tetrahedral amorphous thin film materials {IN Thin Solid Films (Switzerland), Second International Summer School on Thin Film Formation, Hajduszoboszlo, Hungary, 18-24 Sept. 1983}
- 32- (INSC)
TI - An improved deep ultraviolet (DUV) multilayer resist process for high resolution lithography {IN Proc. SPIE Int. Soc. Opt. Eng. (USA), Advances in Resist Technology, Santa Clara, CA, USA, 12-13 March 1984}
- 33- (INSC)
TI - On photoelectrocatalysis of hydrogen and oxygen evolution {IN Int. J. Hydrogen Energy (GB)}
- 34- (INSC)
TI - Electron spin resonance and some electrical and optical properties of GeO₂/sub 2//SiO₂/sub x/ thin films {IN J. Mater. Sci. (GB)}
- 35- (INSC)
TI - Application of conducting transparent layers using liquid crystals {IN Vide les Couches Minces (France)}
- 36- (INSC)
TI - A process for two-layer gold IC metallization {IN Solid State Technol. (USA)}

- 37- (INSC)
TI - Plasma processing of thin chromium films for photomasks {IN J. Electrochem. Soc. (USA)}
- 38- (INSC)
TI - Manufacture of light guides for data transmission {IN Electro-Rev. (Switzerland)}
- 39- (INSC)
TI - Acoustoelectric effect in a monolithic metal-dielectric-CdS layer structure on an LiNbO₃/substrate {IN Zh. Tekh. Fiz. (USSR)}
- 40- (INSC)
TI - Preparation of hydrogen, sodium and potassium ion selective field effect transistors {IN J. Fac. Eng. Univ. Tokyo Ser. A (Japan)}
- 41- (INSC)
TI - All-refractory Josephson logic circuits {IN IEEE J. Solid-State Circuits (USA)}
- 42- (INSC)
TI - Influence of plasma Si-nitride deposition on the dark I-V curves of MIS contacts for inversion layer solar cells {IN Fourth E.C. Photovoltaic Solar Energy Conference. Proceedings of the International Conference, Stresa, Italy, 10-14 May 1982}
- 43- (INSC)
TI - XPS and AES studies on iron-oxide-coated Si photoanodes with a negative flatband potential {IN J. Appl. Phys. (USA)}
- 44- (INSC)
TI - New single-mask approach to bubble device fabrication {IN IEEE Trans. Magn. (USA)}
- 45- (INSC)
TI - Annealing encapsulants for InP. II. Photoluminescence studies {IN Thin Solid Films (Switzerland)}
- 46- (INSC)
TI - Ion beam sputter-deposited diamondlike films {IN J. Vac. Sci. & Technol. (USA), Proceedings of the Thirteenth Annual Symposium of the Greater New York Chapter of the AVS on Plasma and Ion-Beam Processing, Yorktown Heights, NY, USA, 2 June 1982}
- 47- (INSC)
TI - Reactive ion etching of silicon oxides with ammonia and trifluoromethane. The role of nitrogen in the discharge {IN J. Electrochem. Soc. (USA)}
- 48- (INSC)
TI - The effect of hydrogen on the electrical and optical properties of Bi-SiO₂/cermet films {IN Thin Solid Films (Switzerland), Fifth International Thin Films Congress, Herzlia-on-Sea, Israel, 21-25 Sept. 1981}
- 49- (INSC)
TI - 64*128-element high-performance PtSi IR-CCD imager sensor {IN International Electron Devices Meeting, Washington, DC, USA, 7-9 Dec. 1981}
- 50- (INSC)

- TI - High resolution photomasks with ion-bombarded polymethyl methacrylate masking medium {IN J. Electrochem. Soc. (USA)}
- 51- (INSC)
- TI - NMOS silicide/polysilicon gates by lift/off reactive sputter etching {IN J. Vac. Sci. & Technol. (USA), Proceedings of the 28th National Symposium of the American Vacuum Society, Anaheim, CA, USA, 2-6 Nov. 1981}
- 52- (INSC)
- TI - Reactive ion etching of aluminum using SiCl_4 {IN J. Vac. Sci. & Technol. (USA)}
- 53- (INSC)
- TI - Electrical properties of ultrathin oxide layers formed by DC plasma anodization {IN Insulating Films on Semiconductors. Proceedings of the Second International Conference, INFOS 81, Erlangen, Germany, 27-29 April 1981}
- 54- (INSC)
- TI - Low temperature Photo-CVD oxide processing for semiconductor device applications {IN International Electron Devices Meeting, Washington, DC, USA, 7-9 Dec. 1981}
- 55- (INSC)
- TI - Submicron electron-beam patterning of aluminum by a double-layer pattern transfer technique {IN J. Vac. Sci. & Technol. (USA), Proceedings of the 16th Symposium on Electron, Ion, and Photon Beam Technology, Dallas, TX, USA, 26-29 May 1981}
- 56- (INSC)
- TI - Lift-off of thick metal layers using multilayer resist {IN J. Vac. Sci. & Technol. (USA), Proceedings of the 16th Symposium on Electron, Ion, and Photon Beam Technology, Dallas, TX, USA, 26-29 May 1981}
- 57- (INSC)
- TI - Photoluminescence of glow-discharged-prepared amorphous SiO_x {IN J. Lumin. (Netherlands), Proceedings of the 1981 International Conference on Luminescence, Berlin, Germany, 20-24 July 1981}
- 58- (INSC)
- TI - Correlation between conductivity, electron spin resonance and optical absorption in RF sputtered SiO_2 films {IN J. Phys. Colloq. (France), Proceedings of the Ninth International Conference on Amorphous and Liquid Semiconductors, Grenoble, France, 2-8 July 1981}
- 59- (INSC)
- TI - Plasma planarization (IC processing) {IN Solid State Technol. (USA)}
- 60- (INSC)
- TI - Detection of impurities on silicon surfaces {IN J. Appl. Phys. (USA)}
- 61- (INSC)
- TI - Glow-discharge silicon nitride membrane nozzle {IN IBM Tech. Disclosure Bull. (USA)}
- 62- (INSC)
- TI - Planarization of phosphorus-doped silicon dioxide {IN J. Electrochem. Soc. (USA)}
- 63- (INSC)

- TI - Chemical vapour deposition. II {IN New Electron. (GB)}
- 64- (INSC)
TI - X-ray diagnosis of the interaction of 0.53 μ m radiation with layered targets at 5×10^{14} W/cm² {IN Laser Advances and Applications. Proceedings of the Fourth National Quantum Electronics Conference, Edinburgh, Scotland, 19-21 Sept. 1979}
- 65- (INSC)
TI - Selective absorber using glow-discharge amorphous silicon for solar photothermal conversion {IN Sol. Energy Mater. (Netherlands)}
- 66- (INSC)
TI - Thickness measurement of ultrathin films on metal substrates using ATR {IN Appl. Opt. (USA)}
- 67- (INSC)
TI - A high resolution negative electron resist by image reversal {IN IEEE Electron Device Lett. (USA)}
- 68- (INSC)
TI - High frequency light modulator or display {IN IBM Tech. Disclosure Bull. (USA)}
- 69- (INSC)
TI - Monolithic surface acoustic wave (SAW) charge transfer device and its applications {IN Proceedings of the Society of Photo-Optical Instrumentation Engineers, vol.178. Smart Sensors, Washington, DC, USA, 17-18 April 1979}
- 70- (INSC)
TI - Striped optical filters composed of multi-layered TiO₂ and SiO₂ films deposited by RF sputtering {IN Surf. Sci. (Netherlands), Proceedings of the International Conference on Solid Films and Surfaces, Tokyo, Japan, 5-8 July 1978}
- 71- (INSC)
TI - LSI surface leveling by RF sputter etching {IN J. Electrochem. Soc. (USA)}
- 72- (INSC)
TI - Micromethod for refractive index determination of thin films using liquid standards {IN J. Electrochem. Soc. (USA)}
- 73- (INSC)
TI - Cadmium selenide thin-film transistors {IN J. Vac. Sci. & Technol. (USA)}
- 74- (INSC)
TI - Scanned light spot evaluation of MIS solar cells to treat non-uniform peripheral photocurrents {IN Thirteenth IEEE Photovoltaic Specialists Conference-1978, Washington, DC, USA, 5-8 June 1978}
- 75- (INSC)
TI - Reducing interlevel shorts in sputtered insulators {IN IBM Tech. Disclosure Bull. (USA)}
- 76- (INSC)
TI - The formation of thin oxide films by reactive high-frequency sputtering method with a voltage bias {IN Opt.-Mekh. Prom.-st. (USSR)}

-4- (INSC)
AN - B87037640
TI - The influence of various types of passivation on electromigration
resistance of Al-Cu-Si convectors
AU - Roman, P.; Luby, S.; Valicek, J.; Prejda, M.
SO - Elektrotech. Cas. (Czechoslovakia), vol.38, no.1, PP.61-9, 1987, 14 REF.
JC - ELKCA9

-77- (INSC)
TI - High rate sputtering of enhanced aluminium mirrors {IN J. Vac. Sci. &
Technol. (USA), Proceedings of the 23rd National Symposium of the
American Vacuum Society, Chicago, Ill., USA, 21-24 Sept. 1976}

-78- (INSC)
TI - An integrated-optical waveguide and a charge-coupled-device image array
{IN IEEE J. Quantum Electron. (USA)}

-79- (INSC)
TI - Integrated optical detector array, waveguide, and modulator based on
silicon technology {IN IEEE J. Solid-State Circuits (USA)}

SS 41?

prt fu 2,4,7-8,10,13,23-25,31,54,57-59,62-63,76

DT - J (JOURNAL PAPER)
 NU - ISSN 0013578X
 LA - Slovak
 CC - *B2180E; B0520F
 TC - EX (EXPERIMENTAL)
 IT - CVD coatings; electric connectors; passivation; plasma deposited coatings; polymer films; silicon compounds; sputtered coatings
 ST - electromigration resistance; photolithographic processing; Si wafers; dielectric films; polyimide; service life; thin metal films; magnetron sputtered Al-Cu-Si films; SiO/sub 2/ plasma deposited film; Si/sub 3/N/sub 4/ plasma deposited film; Si
 MF - SiO2/bin O2/bin Si/bin O/bin; Si3N4/bin Si3/bin N4/bin Si/bin N/bin; Si/el; AlCuSi/ss Al/ss Cu/ss Si/ss
 AB - Experimental connectors were fabricated by photolithographic processing of magnetron sputtered Al-Cu-Si films on Si wafers. Connectors with widths 4 and 7 mu m and length 900 mu m were passivated by five different dielectric films: chemically deposited SiO/sub 2/ at normal and low pressure, respectively, plasma deposited SiO/sub 2/ and Si/sub 3/N/sub 4/, respectively, and polyimide. The results have indicated that the service life and electromigration resistance of the thin metal films can be improved by passivation. The best results were achieved with polyimide, followed by SiO/sub 2/.

-7- (INSC)

AN - A87033474; B87018045
 TI - Characterization of plasma-enhanced deposited silicon-(oxy)nitride layers: UV and IR transmission (Boston, MA, USA, 5-9 May 1986)
 AU - Claasen, W.A.P.; Kuiper, A.E.T.; Huff, H.R., ED.; Abe, T., ED.; Kolbesen, B., ED.
 OS - Ned. Philips Bedrijven Elcoma, Nijmegen, Netherlands; Electrochem. Soc
 SO - Electrochem. Soc., Pennington, NJ, USA, xiv+1096 PP., PP.274-83, 1986, 16 REF.
 DT - PA (CONFERENCE PAPER)
 CC - *A7865J; A7830; A8115H; A7840; A6855; *B2550F; B2570
 TC - EX (EXPERIMENTAL)
 IT - chemical vapour deposition; infrared spectra of inorganic solids; metallisation; particle backscattering; passivation; refractive index; silicon compounds; visible and ultraviolet spectra of inorganic solids
 ST - Rutherford backscattering; CVD; SiO/sub x/N/sub y/ films; Fourier transform spectra; IR transmission; film composition; RBS; UV transparency; deposition conditions; SiO/sub 2/-Si/sub x/N/sub y/H/sub z/
 MF - SiO2SiNH/ss SiO2/ss O2/ss Si/ss H/ss N/ss O/ss
 AB - The authors studied the ultraviolet and infrared transmission of plasma silicon-nitride and silicon-oxynitride layers. The results are related to film composition as derived from RBS and FTIR measurements. It is shown that the UV transparency of the nitride and oxy-nitride films is, in a first approximation, only a function of the excess of silicon in the film, and is independent of the amount of oxygen incorporated in the layers. By selecting the proper deposition conditions, (oxy)nitride layers which are transparent to UV radiation can be grown.

-8- (INSC)

AN - A87038760; B87017841
 TI - Interface state generation in the Si-SiO/sub 2/-system by nonionizing UV irradiation (Toulouse, France, 16-18 April 1985)
 AU - Blumenstock, K.; Hezel, R.; Simonne, J.J., ED.; Buxo, J., ED.
 OS - Inst. fur Werkstoffwissenschaften, Erlangen-Nurnberg Univ., Germany; CNRS; IEEE; et al
 SO - North-Holland, Amsterdam, Netherlands, x+265 PP., PP.221-4, 1986, 12 REF.
 DT - PA (CONFERENCE PAPER)

NU - ISBN 0444878726
 CC - *A7340Q; A7320; A6180; *B2530F
 TC - EX (EXPERIMENTAL)
 IT - elemental semiconductors; interface electron states; radiation effects; semiconductor-insulator boundaries; silicon; silicon compounds
 ST - semiconductor insulator boundary; traps; interface state generation; nonionizing UV irradiation; Si-SiO/sub 2/ interface; Si/sub 3/N/sub 4/ plasma deposition
 MF - Si-SiO₂/int SiO₂/int O₂/int Si/int O/int SiO₂/bin O₂/bin Si/bin O/bin Si/el; Si₃N₄/int Si₃/int N₄/int Si/int N/int Si₃N₄/bin Si₃/bin N₄/bin Si/bin N/bin
 AB - Interface states at the Si/SiO/sub 2/ interface are generated by nonionizing UV irradiation after plasma silicon nitride deposition onto the thermal silicon oxide. The generation occurs at photon energies >or=4.3 eV+or-0.2 eV even at nearly zero oxide fields. Traps at the Si/SiO/sub 2/ interface induced during the plasma deposition process but simultaneously passivated with hydrogen are activated by UV radiation.

-10- (INSC)

AN - A87021721
 TI - Chemical states study of Si in SiO/sub x/ films grown by PECVD (TRISA 85: Proceedings of the First American Vacuum Society Tri-State Symposium on Surface Analysis and Thin Film Technology, Oconomowoc, WI, USA, 30 April-3 May 1985)
 AU - Chao, S.S.; Takagi, Y.; Lucovsky, G.; Pai, P.; Custer, R.C.; Tyler, J.E.; Keem, J.E.
 OS - Energy Conversion Devices Inc., Troy, MI, USA
 SO - vol.26, no.4, PP.575-83, Oct. 1986, 29 REF.
 JC - ASUSEE
 CN - 0169-4332/86/ \$03.50
 DT - PA (CONFERENCE PAPER)
 NU - ISSN 01694332
 CC - *A6855; A7865J; A7830G; A7960G; A7920F; A6830; A7320
 TC - EX (EXPERIMENTAL)
 IT - Auger effect; bonds (chemical); CVD coatings; infrared spectra of inorganic solids; lattice dynamics; localised electron states; plasma deposited coatings; silicon compounds; valence bands; X-ray photoelectron spectra
 ST - chemical state; IR spectra; thin films; Si-O bonds; bending vibrations; core states; homogeneous films; stretching vibrations; vibration frequency shift; rocking vibrations; low temperature; plasma enhanced chemical vapor deposition; PECVD; local chemical bond; X-ray photoelectron spectroscopy; XPS; Auger electron spectroscopy; AES spectra; local bonding; Si-Si bonds; average chemical bonding; 350 degC; SiO/sub x/-Si; Si
 MF - SiO-Si/int SiO/int Si/int O/int SiO/bin Si/bin O/bin Si/el; Si/sur Si/el
 NM - temperature K=E02*6.23
 AB - Thin films of SiO/sub x/ have been grown by low temperature (350 degrees C) plasma enhanced chemical vapor deposition (PECVD), and the local chemical bond of Si and O has been investigated by infrared (IR) spectroscopy, X-ray photoelectron spectroscopy (XPS), and Auger electron spectroscopy (AES). The AES spectra reflect the details of the local bonding, i.e. the relative numbers of Si-O and Si-Si bonds, while the IR and XPS spectra reflect the average chemical bonding. In this context, the combination of the three techniques confirms that the suboxide films produced by low temperature PECVD are homogeneous, in contrast to being two phases with regions of a-Si and a-SiO/sub 2/.

-13- (INSC)

AN - A86104866; B86058403

TI - Oxidation of Si by microwave-excited oxygen-plasma through protective Al coating {IN Jpn. J. Appl. Phys. Part 2 (Japan)}
 AU - Matsuda, T.; Niu, H.; Maeda, M.; Takai, M.
 OS - Dept. of Electron., Himeji Inst. of Technol., Japan
 SO - Jpn. J. Appl. Phys. Part 2 (Japan), vol.25, no.5, PP.L425-7, May 1986
 JC - JAPLD8
 DT - J (JOURNAL PAPER)
 NU - ISSN 00214922
 CC - *A8160C; *B2550E; B2520C
 TC - EX (EXPERIMENTAL)
 IT - aluminium; elemental semiconductors; oxidation; plasma applications; protective coatings; silicon; X-ray photoelectron spectra
 ST - semiconductor; microwave-excited oxygen-plasma; protective Al coating; Si wafer; *U(-light irradiation; depth profile; chemical composition; XPS; Ar-ion sputtering; surface excitation; O/sub 2/+N/sub 2/ mixture plasma; intermixed-insulator films; SiO/sub 2/-Al/sub 2/O/sub 3/-SiO/sub 2/-Si; O/sub 2/+H/sub 2/ mixture plasma
 AB - An Al film was formed as a protective layer on a Si wafer. Oxidizing species generated in a microwave-excited oxygen-plasma penetrated the Al protective layer under UV-light irradiation. The depth profile of the chemical composition of the oxidized film was measured by XPS with Ar-ion sputtering. It was found that the UV-light enhances the oxidation rate through a surface excitation. In O/sub 2/+N/sub 2/ mixture plasma, intermixed-insulator films on Si (SiO/sub 2/-Al/sub 2/O/sub 3/-SiO/sub 2/-Si substrate) were prepared by one sequential plasma process. In O/sub 2/+H/sub 2/ mixture plasma, the inner SiO/sub 2/ was not recognized.

-23- (INSC)

AN - A86005143; B86007032
 TI - Integral solar cell covers by plasma activated CVD {IN Conference Record of the Seventeenth IEEE Photovoltaic Specialists Conference - 1984 (Cat. No. 84CH2019-8), Kissimmee, FL, USA, 1-4 May 1984}
 AU - Gurev, H.S.
 OS - OCLI, Santa Rosa, CA, USA; IEEE
 SO - IEEE, New York, USA, 1432 PP., PP.191-5, 1984, 2 REF.
 CN - CH2019-8/84/0000-0191 \$01.00
 DT - PA (CONFERENCE PAPER)
 CC - *A8630J; A8115H; *B8420; B0520F; B7630B
 TC - PR (PRACTICAL)
 IT - chemical vapour deposition; CVD coatings; elemental semiconductors; silicon; silicon compounds; solar cells; space vehicle power plants
 ST - integral solar cell covers; deformation; stresses; system weight reduction; plasma activated CVD; SiO/sub 2/ covers; Si solar cells; Al/sub 2/O/sub 3/; space power systems; cell assembly
 AB - SiO/sub 2/ covers as thick as 5 mils have been deposited directly on Si solar cells at temperatures below 150 degrees C with rates above 0.8 mils per hour by a novel plasma activated CVD process. Covers about 2 mils thick deform the cells excessively but do not delaminate. Stresses have been lowered by mixing Al/sub 2/O/sub 3/ into the cover through alterations in the CVD reactant gas mixture. In space power systems, these integral covers have promise for reducing system weight while simplifying cell assembly.

-24- (INSC)

AN - B85056131
 TI - RIE planarization process for magnetic bubble devices {IN IEEE Trans. Magn. (USA)}
 AU - Chi, G.-C.; Mogab, C.J.
 OS - AT&T Bell Labs., Murray Hill, NJ, USA
 SO - IEEE Trans. Magn. (USA), vol.MAG-21, no.2, PP.1170-3, March 1985, 13 REF.

JC - IEMGAQ
 CN - 0018-9464/85/0300-1170 \$01.00
 DT - J (JOURNAL PAPER)
 NU - ISSN 00189464
 CC - *B3120L
 TC - PR (PRACTICAL); EX (EXPERIMENTAL)
 IT - magnetic bubble devices; Permalloy; photoresists; sputter etching
 ST - SiO/sub 2/ film; spin coating; RIE planarization process; reactive ion etching; AlCu conductor patterns; fabrication; thick photoresist layer; NF/sub 3/-CHF/sub 3/ plasma; feed gas composition; planarization; thickness uniformity
 AB - A reactive ion etching process which planarizes the silicon dioxide film deposited over steps in AlCu conductor patterns has been developed for Permalloy magnetic bubble devices. A conventional fabrication sequence was used through deposition of the spacer SiO/sub 2/ layer which isolates AlCu conductors from Permalloy propagate elements. Prior to Permalloy deposition, however, a thick photoresist layer was spin-coated on the SiO/sub 2/ layer and hard-baked to form a planar surface. The photoresist was then etched-back in a NF/sub 3/-CHF/sub 3/ plasma, in the reactive ion etching (RIE) mode, under conditions that etch photoresist and SiO/sub 2/ at nearly identical rates. The planar resist surface profile was thus transferred into the underlying SiO/sub 2/ film. Etch rates for photoresist and SiO/sub 2/ were determined as a function of feed gas composition, and the degree of planarization and thickness uniformity of the remaining SiO/sub 2/ were characterized.

-25- (INSC)

AN - A85107896; B85055464
 TI - Structural damage produced in InP(100) surfaces by plasma-employing deposition techniques {IN J. Vac. Sci. & Technol. A (USA), Proceedings of the 31st National Symposium of the American Vacuum Society, Reno, NV, USA, 4-7 Dec. 1984)
 AU - Dautremont-Smith, W.C.; Feldman, L.C.
 OS - AT&T Bell Labs., Murray Hill, NJ, USA
 SO - vol.3, no.3, pt.1, PP.873-8, May-June 1985, 28 REF.
 JC - JVTAD6
 CN - 0734-2101/85/030873-06 \$01.00
 DT - PA (CONFERENCE PAPER)
 NU - ISSN 07342101
 CC - *A6820; A6855; *B2520D; B0520F
 TC - EX (EXPERIMENTAL)
 IT - channelling; III-V semiconductors; indium compounds; particle backscattering; plasma deposition; sputter deposition; substrates; surface structure
 ST - semiconductor; InP(100) surfaces; structural damage; plasma-enhanced chemical vapor deposition; Rutherford backscattering; channeling; dielectric; metal; ion beam sputter deposition
 AB - In previous work the authors demonstrated that RF diode sputter deposition of an oxide onto a clean InP(100) surface produced structural damage and/or interfacial mixing at any sputtering power. In contrast, plasma-enhanced chemical vapor deposition of SiO/sub 2/ at 13.56 MHz at any plasma power was damage-free and gave an abrupt interface. Structurally damage-free means that the large majority of the surface and near-surface In and P atoms are not displaced from their lattice sites; this does not preclude the presence of electrical or optical modification. In this work, again using Rutherford backscattering under channeling conditions, they have investigated the interface between InP and a deposited dielectric or metal for various other types of plasma and sputter deposition. Dose and/or energy of species incident on the InP surface during the initial stage of deposition has been varied over the

spectrum intermediate to the relative extremes of the two previously studied cases. The general conclusions are as follows. Plasma deposition is structurally damage-free, even at low frequency and at a low deposition rate to plasma power ratio, as for SiN/sub x/. Sputter deposition, however, is always damaging, even when there are no energetic negative ions incident on the InP substrate, or even when the InP substrate is remote from the plasma, as in ion beam sputter deposition. Use of a light sputtering gas (He) in place of Ar increases the magnitude of damage. Annealing at 450 degrees C can reduce but not remove the damage.

-31- (INSC)

AN - A85012514

TI - Defect structures in tetrahedral amorphous thin film materials (IN Thin Solid Films (Switzerland), Second International Summer School on Thin Film Formation, Hajduszoboszlo, Hungary, 18-24 Sept. 1983)

AU - Donovan, T.M.

OS - Michelson Lab., China Lake, CA, USA

SO - vol.116, no.1-3, PP.41-54, 22 June 1984, 44 REF.

JC - THSFAP

DT - PA (CONFERENCE PAPER)

NU - ISSN 00406090

CC - *A6855; A8115C; A0130R; A6140

TC - GR (GENERAL/REVIEW)

IT - amorphous semiconductors; amorphous state; elemental semiconductors; germanium; hydrogen; noncrystalline state structure; reviews; silicon; silicon compounds; sputter deposition; voids (solid)

ST - defect structures; passivation; amorphous Ge; optical properties; charged particle bombardment; hydrogenation; optoelectronic applications; semiconductor; voids; dangling bonds; plasma deposition; amorphous Si:H; tetrahedral amorphous thin film materials; transport properties; deposition; post-deposition annealing; growth process; glow discharge decomposition; sputtering; recombination centers; microstructure; oxidation; reactive deposition process; SiO/sub 2/

AB - The dependence of the optical and transport properties of tetrahedral amorphous thin film materials on deposition and post-deposition annealing conditions is known to relate to the reactivity of defect structures (voids and dangling bonds) that are incorporated into the films during the growth process. Plasma deposition techniques such as the glow discharge decomposition of silane (SiH/sub 4/) or sputtering in reactive (Ar-H/sub 2/) gas mixtures are effective in passivating (or hydrogenating) silicon dangling bonds and thereby producing films with low numbers of recombination centers. However, results indicate that it is equally important to eliminate the microstructure as well in order to achieve material that shows no post-deposition oxidation and is suitable for opto-electronic applications, e.g. solar cells, photoreceptors, thin film transistors, etc. In this paper details of the reactive deposition process are reviewed, particularly the rôle of bombardment by charged particles in obtaining structurally and compositionally homogeneous hydrogenated amorphous silicon and SiO/sub 2/.

luminescence, Berlin, Germany, 20-24 July 1981,

AU - Carius, R.; Fischer, R.; Holzenkampfer, E.

OS - Fachbereich Phys., Univ. of Marburg, Marburg, Germany; IUPAP; European Phys. Soc.; Electrochem. Soc.; et al

SO - vol.24-25, pt.1, PP.47-50, Nov. 1981, 15 REF.

JC - JLUMA8

DT - PA (CONFERENCE PAPER)

CC - *A7855H; A7865J; A7155J

TC - EX (EXPERIMENTAL)

IT - bonds (chemical); defect electron energy states; luminescence of inorganic solids; photoluminescence; plasma deposited coatings; silicon compounds

ST - glow discharge films; band tailing; Si-Si bonds; amorphous SiO/sub x/; luminescence bands; optical-absorption edge; gap width; Si-O bonds

AB - Amorphous films of SiO/sub x/(H,N) were prepared in a glow discharge of suitable mixtures of SiH/sub 4/ with N/sub 2/O. The photoluminescence of these films was measured in the range x=0 to x approximately=1.5. Two luminescence bands were found, one of which shifts, as the optical-absorption edge, to higher energy with increasing oxygen content. As x increases, this luminescence band broadens, and the absorption edge becomes less steep. No significant influence of Stokes shifts was found. The results indicate that both the gap width and the tailing of the bands increase with x. This can be understood with the role of the Si-Si and Si-O bonds in SiO/sub x/.

-58- (INSC)

AN - A82045975

TI - Correlation between conductivity, electron spin resonance and optical absorption in RF sputtered SiO/sub 2/ films {IN J. Phys. Colloq. (France), Proceedings of the Ninth International Conference on Amorphous and Liquid Semiconductors, Grenoble, France, 2-8 July 1981}

AU - Meaudre, M.; Meaudre, R.; Tardy, J.; Tribollet, B.
 OS - Univ. de Lyon, Villeurbanne, France; IUPAP
 SO - vol.42, no.C-4, pt.2, PP.1013-16, Oct. 1981, 15 REF.
 JC - JPQCAK
 DT - PA (CONFERENCE PAPER)
 CC - *A7220F; A7630M; A7840H; A7360H; A7280; A7865J
 TC - EX (EXPERIMENTAL)
 IT - amorphous state; electrical conductivity of amorphous semiconductors and insulators; insulating thin films; paramagnetic resonance of defects; silicon compounds; sputtered coatings; visible and ultraviolet spectra of inorganic solids
 ST - amorphous SiO/sub 2/; UV absorption spectra; RF sputtered SiO/sub 2/ films; conductivity; ESR; optical absorption; H/sub 2/O; charge carriers
 AB - Reports on conductivity, ESR and optical absorption spectra obtained on RF sputtered SiO/sub 2/ films. Measurements performed in different ambiances show that H/sub 2/O considerably alters the physical properties of the films. The first pumping after the elaboration of a film reduces both, the conductivity and the total ESR signal, while the optical absorbance is increased. When wet air is again admitted the conductivity rapidly increases while ESR and optical spectra are unchanged. It is concluded that charge carriers are introduced by H/sub 2/O independently of intrinsic defects. Complementary experiments are suggested to investigate the possible influence of intrinsic defects on transport phenomena.

-59- (INSC)

AN - B81046078
 TI - Plasma planarization (IC processing) {IN Solid State Technol. (USA)}
 AU - Adams, A.C.
 OS - Bell Labs., Murray Hill, NJ, USA
 SO - Solid State Technol. (USA), vol.24, no.4, PP.178-81, April 1981, 5 REF.
 JC - SSTEAP
 DT - J (JOURNAL PAPER)
 CC - *B2550E
 TC - ND (NEW DEVELOPMENTS); PR (PRACTICAL); EX (EXPERIMENTAL)
 IT - etching; integrated circuit technology; plasma applications; semiconductor technology; silicon compounds
 ST - smoothing steps in P-doped SiO/sub 2/; IC processing; plasma planarisation; plasma etching
 AB - A process is described for smoothing steps in P-doped silicon dioxide. Samples to be smoothed or planarized are coated with photoresist which flows during a subsequent low temperature bake to form a relatively smooth surface. The resist is etched in a CF/sub 4/-O/sub 2/ plasma using conditions that etch the resist and the P-glass at about the same rate. This preserves the original resist profile and leaves only small steps with very shallow angles in the P-glass. In contrast to the flowed P-glass process, planarization does not require high temperatures and is nearly independent of the phosphorus concentration.

-62- (INSC)

AN - B81027950
 TI - Planarization of phosphorus-doped silicon dioxide {IN J. Electrochem. Soc. (USA)}
 AU - Adams, A.C.; Capio, C.D.
 OS - Bell Labs., Murray Hill, NJ, USA
 SO - J. Electrochem. Soc. (USA), vol.128, no.2, PP.423-9, Feb. 1981, 24 REF.
 JC - JESOAN
 DT - J (JOURNAL PAPER)
 CC - *B2550E
 TC - PR (PRACTICAL)

EX (EXPERIMENTAL)

- TC - EX (EXPERIMENTAL)
- IT - alumina; light scattering; optical films; radiofrequency sputtering; refractive index; silicon compounds; tantalum compounds
- ST - voltage bias; deposition rates; scattering coefficients; RF sputtering; thin oxide film formation; reactive HF sputtering; refractive indices; Ta/sub 2/O/sub 5/; Al/sub 2/O/sub 3/; SiO/sub 2/
- AB - Brief experimental details are given of the preparation of oxide films of Ta, Al, and Si, on various substrates. Indices of refraction, deposition rates, and scattering coefficients of the films are tabulated against ratios of bias to sputtering voltage in the range 0 to 0.45. It is

IT - phosphorus; semiconductor technology; silicon compounds; surface texture
 ST - smoothing surfaces; positive photoresist; etched; p-glass; surface
 profile; step heights; angles; SiO/sub 2/:P; polarisation
 AB - A process has been developed for smoothing surfaces of phosphorus-doped
 silicon dioxide (P-glass). Samples are coated with a positive photoresist
 which flows during application to form a relatively smooth surface. The
 photoresist is etched in a CF/sub 4/-O/sub 2/ plasma using conditions
 that etch the photoresist and the P-glass at nearly the same rates. Since
 the surface profile of the photoresist is preserved during etching, the
 P-glass is left with a relatively smooth surface. This process reduces
 step heights, usually by at least 50%, and decreases the angles at abrupt
 steps to 5 degrees -30 degrees. In contrast to the flowed P-glass
 process, planarization does not require high temperatures and is
 independent of phosphorus concentration.

-76- (INSC)
 AN - A78003045
 TI - The formation of thin oxide films by reactive high-frequency sputtering
 method with a voltage bias (IN Opt.-Mekh. Prom.-st. (USSR))
 AU - Pervuev, A.F.; Cherezova, L.A.; Mikhailov, A.V.
 SO - Opt.-Mekh. Prom.-st. (USSR), vol.44, no.2, PP.68-9, Feb. 1977, 2 REF.
 TAKEN FROM: Sov. J. Opt. Technol. (USA), vol.44, no.2, PP.122-3, Feb.
 1977
 JC - ompaq; sjotbh

concluded that bias reactive RF sputtering gives high sputtering rates with near bulk film properties.

SS 41?
stop y

SESSION FINISHED 08/17/93 1:36 P.M. (CENTRAL TIME)
ELAPSED TIME ON INSC: 0.78 HRS.
\$98.28 EST COST CONNECT TIME.
\$109.65 EST COST ONLINE PRTS: 129
\$207.93 EST TOTAL COST THIS INSC SESSION.

ELAPSED TIME THIS SESSION: 1.69 HRS.
\$205.83 EST COST CONNECT TIME.
\$21.97 EST COST TELECOM.
\$180.05 EST COST ONLINE PRTS: 217
\$385.88 EST TOTAL COST THIS TERMINAL SESSION.

ORBIT SEARCH SESSION COMPLETED. THANKS FOR USING ORBIT!

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oxygen  ***laser*** vapor deposition silica; silane nitrous oxide
***laser*** deposition silicon; ***photodeposition*** silica
film
IT  ***Laser*** radiation, chemical and physical effects
    (in chem.-vapor deposition of silica films, with different
    precursors)
IT  ***Photolysis***
    ( ***laser*** -induced, of silane and nitrous oxide, in
    chem.-vapor deposition of silica)
IT  56617-31-3, Argon fluoride
    ( ***excimer*** ***laser*** , in chem. vapor deposition of
    silica)
IT  ***78-10-4*** , Tetraethoxysilane
    ( ***laser*** -induced chem.-vapor deposition of silica from)
IT  ***7631-86-9p*** , Silica, preparation
    ( ***laser*** -induced chem.-vapor deposition of, role of
    precursors in)
IT  7803-62-5, Silane, uses and miscellaneous 10024-97-2, Nitrous
    oxide, reactions
    ( ***photodecompn*** . of, in ***laser*** -induced chem.
    vapor deposition of silica)
IT  ***7782-44-7*** , Molecular oxygen, reactions
    ( ***photolysis*** of mixts. contg. tetraethoxysilane and, in
    deposition of silica films)

```

L17 ANSWER 7 OF 15 COPYRIGHT 1993 ACS
 AN CAL14(14):132846n
 TI **Excimer** **laser** deposition of silica films: a
 comparison between two methods
 AU Leon, B.; Klumpp, A.; Perez-Amor, M.; Sigmund, H.
 CS Dep. Fis. Apl., Univ. Vigo
 LO Vigo 36280, Spain
 SO Appl. Surf. Sci., 46(1-4), 210-14
 SC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 SX 66, 76
 DT J
 CO ASUSEE

IS 0169-4332
 PY 1990
 LA Eng
 AB Two different **laser** -induced chem.-vapor deposition (LCVD)
 methods are compared, both using an ArF **excimer**
 laser in perpendicular configuration, but with different
 precursors: tetraethoxysilane (TEOS) + O₂ and SiH₄ + N₂O. The
 dependencies of the deposition rate on the substrate temp., the
 total pressure and the **laser** energy d. show that the
 process kinetics is completely different for both systems. In fact,
 the activation energy is much lower for the SiH₄ + N₂O system than
 for TEOS + O₂. The TEOS + O₂ system leads to SiO₂ films with a
 higher H₂O content and lower optical transmittance.

62 (INSC)
 AN - B90061435 *Refer*
 TI - Selecting an organosilicon source for LPCVD oxide (IN Semicond. Int. (USA))
 AU - Gelernt, B.
 OS - J.C. Schumacher Co., Carlsbad, CA, USA
 SO - Semicond. Int. (USA), vol.13, no.3, pp.82-5, March 1990 13 REF.
 JC - SITLDD
 DT - J (JOURNAL PAPER)
 NU - ISSN 01633767
 CC - *B2550E; B2570; B0520F
 TC - AP (APPLICATIONS); PR (PRACTICAL); EX (EXPERIMENTAL)
 IT - chemical vapour deposition; integrated circuit technology; organic compounds; semiconductor technology; VLSI
 ST - VLSI device fabrication; liquid organosilicon sources; tetraethylorthosilicate; TEOS; 1,3,5,7 tetramethylcyclotetrasiloxane; TMCTS; TOMCATS source material; diethylsilane; LTO-410 source material; commercial horizontal hot wall; LPCVD furnace; 100 mm; SiO/sub 2/ film
 MF - SiO2/int 02/int Si/int 0/int SiO2/bin 02/bin Si/bin 0/bin
 NM - size m=E-01*1.0
 AB - With the drive towards submicron feature sizes and high aspect ratio geometries, the use of liquid organosilicon sources like tetraethylorthosilicate (TEOS) has increased dramatically in the past few years. The superior step coverage and higher purity of this material

relative to silane has become critical to the fabrication of VLSI devices. TEOS also has a significant safety advantage over silane, a pyrophoric toxic gas. New organosilicon sources at Schumacher include 1,3,5,7 tetramethylcyclotetrasiloxane (TMCTS), (TOMCATS source material) and diethylsilane. (NRS) (LTO-410 source material). This article compares

characteristics of the several silicon source materials. The author studied the depositions in a commercial horizontal hot wall, LPCVD furnace at pressures below 1 Torr on 100 mm wafers.

LT /5-76-3 /8-08-0 ***8-10-4*** 10/-40-0 778-24-5 791-29-7
631-36-7 681-84-5 756-81-0 768-32-1 778-24-5 791-29-7
993-07-7 994-79-6 998-30-1 1048-08-4 1066-40-6 1111-74-6
1174-72-7 1992-48-9 2031-67-6 2370-88-9 2917-47-7
2996-92-1 4766-57-8 ***10028-15-6*** , Ozone, uses and
miscellaneous 13170-23-5
(in chem. vapor deposition of silica films for covering
semiconductor devices)

L17 ANSWER(8) OF 15 COPYRIGHT 1993 ACS
AN CA112(8):67888V
TI Covering semiconductor devices with silica films
AU Hisamune, Yoshiaki
CS NEC Corp.
LO Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
PI JP 01082634 A2 28 Mar 1989 Heisei
AI JP 87-242113 25 Sep 1987
IC ICM H01L021-316
SC ICS H01L023-30
SX 76-3 (Electric Phenomena)
DT 75
CO P
PY JKXXAF
LA 1989
AB Japan

In the prepn. of a semiconductor device, which comprises a device element, an external leadout, and a metal wire connecting the leadout and the device terminal, at least the device element is covered by a SiO2 film formed by chem. vapor deposition with the use

of an org. silane (e.g., Si(OEt)4) and O3. Optionally, the deposition process is followed by heating in O, while ***UV*** radiation is applied on the film. The SiO2 film can greatly improve moisture resistance of the semiconductor devices.

semiconductor device silica film deposition
Semiconductor devices
(chem. vapor deposition of silica films for covering)
IT ***7631-86-9***, Silica, uses and miscellaneous

L17 ANSWER (12) OF 15 COPYRIGHT 1993 ACS *
AN CA105(14):124857r
TI Thin-film formation
AU Horioka, Keiji; Arikado, Tsunetoshi
CS Agency of Industrial Sciences and Technology
LO Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
PI JP 61063020 A2 1 Apr 1986 Showa
AI JP 84-183728 4 Sep 1984

IC ICM H01L021-205
ICS H01L021-263; H01L021-31
SC 75-2 (Crystallography and Liquid Crystals)
SX 74, 76

DT P
CO JKXXAF

PY. (1986)
LA Japan

AB In depositing a thin film on a substrate by activating a source gas,
an adsorption accelerating agent (which has affinity for the source
gas and an equil. vapor pressure lower than that of the source gas)
is used to effect selective deposition of the thin film. Thus, a
substrate in a mixt. contg. O, Cl, and Si(OEt)₄ was selectively
irradiated with a ***laser*** to selectively form a
chloroethoxytrimethoxysilane layer on the substrate, and then
irradiated in the same mixt. to selectively form a SiO₂ film.
W film deposition
T Films

(deposition of, adsorption-accelerating agent for)
T ***Laser*** radiation, chemical and physical effects

4-1-86

TEOS + UV → SiO₂

63020

Apr. 1, 1986

9: 3 of 3

6

FORMATION OF THIN FILM

ENTOR: KEIJI HORIKAWA, et al. (1)
 IGNEE: AGENCY OF IND. SCIENCE & TECHNOL

3-1-86

63020

Apr. 1, 1986

L29: 3 of 3

FORMATION OF THIN FILM

- NO: 13-187120
 - PUBLI: Ser. 4, 1986
 - INT ABSTRACTS OF JAPAN
 - SER NO: 2422
 - VOL NO: Vol. 10, No. 226
 - PUB DATE: Aug. 8, 1986
 - CL: H01L 21*265; H01L 21*263; H01L 21*31

TRACT:

POSE: To increase the speed and efficiency of deposition of a thin film as
 1. as to conceive improvement in the quality of the film by a method
 2. in an absorption accelerating agent having affinity with raw gas is

63020

Apr. 1, 1986

L29: 3 of 3

FORMATION OF THIN FILM

1.

STITUTION: A substrate 12, wherein a tetraethoxysilane (TEOS-Cl) layer
 ing affinity with raw gas (oxygen and chlorine) is coated in advance, is
 led on the susceptor 11 located in a reaction chamber 11. Cl.sub.2,
 1b.2 and TEOS are introduced into the chamber 11 from gas introducing
 20 14. approx. 10, the laser beam 19 sent from a laser beam source
 is made to irradiate on the substrate 12 through a window 20, and an
 .sub.2 film 21 is deposited on the substrate 12. As TEOS is used,
 speed and efficiency of deposition and the quality of the thin film 21
 be improved.

TEOS + laser → SiO₂ CVD layer

TEOS + plasma \rightarrow SiO₂ CVD layer

224 all 1-2

2-219232

Aug. 31, 1990
FORMING METHOD OF THIN FILM

L24: 1 of 2

8:20:05

2-219232

Aug. 31, 1990
FORMING METHOD OF THIN FILM

L24: 1 of 2

INVENTOR: KOSAKU YAMADA
SIGNEE: MATSUSHITA ELECTRIC CO LTD
PPL NO: 01-39889
ATE FILED: Feb. 22, 1991
ATENT ABSTRACTS OF JAPAN
BS GRP NO: E1802
BS VOL NO: Vol. 14, No. 11
BS PUB DATE: Nov. 14, 1991
NT-CL: H01L 21/316

ABSTRACT:

PURPOSE: To obtain SiO₂ sub.2 and improve insulation properties.

2-219232

Aug. 31, 1990
FORMING METHOD OF THIN FILM

L24: 1 of 2

elimination of impurity of a thin film formed of TEOS by using oxygen radical produced by oxygen plasma or UV.

CONSTITUTION: After an SiO₂ sub.2 film is formed by using TEOS, the film is exposed to the following atmosphere of TEOS with TEOS; said atmosphere is produced by decomposing and/or sub.2 of O.sub.2, N.sub.2O, NO, NO.sub.2, CO, and CO.sub.2, or a mixture of sub.2 and inert gas, by using plasma. For example, a first TEOS film 12 is formed on a substrate 11; an aluminum wiring containing Si is patterned as a first metal wiring 13; an SiO₂ sub.2 film 14 is formed as a second insulating film 14 by performing plasma decomposition of TEOS and sub.2 gas in a parallel flat plates type plasma CVD apparatus. Further, after the SiO₂ sub.2 film is deposited, it is exposed to O.sub.2 gas plasma for about 5 minutes and treated. Thereby the leak current of the

2-219232

Aug. 31, 1990
FORMING METHOD OF THIN FILM

L24: 1 of 2

O.sub.2 film of TEOS can be reduced.

ANSWER 5 OF 10 CO RIGHT 1993 ACS

CA113(2):16116e

Low-temperature ***deposition*** of silicon oxide films by

microwave ***plasma*** ***CVD*** of TEOS

AU Ray, S. K.; Maiti, C. K.; Lahiri, S. K.; Chakraborti, N. B.

CS Dep. Electron. Electr. Commun. Eng., Indian Inst. Technol.

LO Kharagpur, India

SO Semicond. Sci. Technol., 5(4), 361-3

SC 76-12 (Electric Phenomena)

DT J

CO SSTEET

IS 0268-1242

PY 1990

LA Eng

AB Silicon dioxide films on silicon have been ***deposited*** by
microwave ***plasma*** -enhanced MOCVD process using
tetraethylorthosilicate and O. The structural characterization of
the films have been carried out by measurements of refractive index
and etch rate and anal. of IR absorption and x-ray
photoelectron spectra. MOS capacitors fabricated using
deposited oxides have been used to characterize the elec.
behavior of the films. Results indicate a quality suitable for VLSI
application.

KW silica film ***deposition*** ***plasma***

tetraethylorthosilicate

IT ***7631-86-9***, Silica, uses and miscellaneous

(***deposition*** of films of, low-temp., by

microwave ***plasma*** of tetraethylorthosilicate)

IT 7440-21-3, Silicon, uses and miscellaneous

(low-temp. ***deposition*** of silica on, by ***plasma***
in tetraethylorthosilicate)

IT ***78-10-4***

(silica film ***deposition*** on silicon by ***microwave***
plasma of oxygen in)

SN 702,492

P15

FILE 'USPAT' ENTERED AT 17:31:32 ON 28 JUN 91

SET PAGELNGTH 17

SET LINELENGTH 79

1 0 3.TETRA-ETHYL-OXY-SILANE#
2 5 3 TETRAETHYLOXY-SILANE#
3 3 3 L2 AND 427/CLAS
4 332 5 TEDS#
5 55 3 L4 AND 427/CLAS
6 55 3 L3 OR L5
7 39 5 L5 AND PLASMA?
8 343 5 TETRAETHYLOXY-SILANE? OR TEDS?
9 54 5 L3? PLASMA?
10 475922 5 (PHOTO-P) (ACTIVAT? OR CHEMICAL?) OR (LIGHT? OR LASER? OR U
11 22 5 L3? L10
12 SET HIGH OFF
13 7 5 L7 AND 417/CLAS
14 1 5 L11 AND 427/CLAS
15 17 5 L11 AND 118/CLAS OR 427/CLAS
16 17 5 L11 AND 118/CLAS OR 427/CLAS
17 10 5 L14 AND L5
18 1 5 L11 AND L16

FILE 'UPDASE' ENTERED AT 17:52:31 ON 28 JUN 91

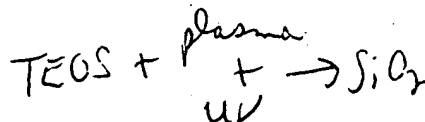
19 11 5 TETRAETHYLOXY-SILANE# OR TEDS#
20 20614 5 PLASMA?
21 10 5 L19 AND L20
22 219337 5 (PHOTO-P) (ACTIVAT? OR CHEMICAL?) OR (LIGHT? OR LASER? OR U
23 5 3 L19 AND L22
24 2 5 L21 AND L23
25 4 5 L23 NOT L24
26 34087 5 SID# OR SILICON OXIDE#
27 6 5 L21 AND L26
28 0 5 L23 AND L6
29 3 5 L23 AND L26
30 964 5 NF# OR NITROGEN TRIFLUORIDE#
31 13 5 L26 AND L30 AND PLASMA? AND (ETCH? OR CLEAN?)
32 2 5 L31 AND (CVD OR CHEMICAL VAPOR DEPOSITION?)
33 11 5 L31 NOT L32

FILE 'USPAT' ENTERED AT 18:31:44 ON 28 JUN 91

34 1 5 L11 AND (427/CLAS OR 118/CLAS)

→

L7) ANSWER 4 OF 10 COPYRIGHT 1993 ACS *Ref.*
 AN CA114(10):92757a
 TI Planarized ***deposition*** of high-quality silicon dioxide film
 By ***photoassisted*** ***plasma*** ***CVD*** at
 300.degree.C using tetraethyl orthosilicate
 Suzuki, Nobumasa; Masu, Kazuya; Tsubouchi, Kazuo; Mikoshiba, Nobuo
 CS Prod. Eng. Res. Lab., Canon Inc.
 LO Tokyo 146, Japan
 SO Jpn. J. Appl. Phys., Part 2, 29(12), L2341-L2344
 SC 76-3 (Electric Phenomena)
 DT J
 CO JAPLD8
 IS 0021-4922
 PY 1990
 LA Eng
 AB High-quality SiO₂ films were ***deposited*** by a
 photoassisted ***plasma*** ***CVD*** method using
 tetraethyl orthosilicate (TEOS) at 300.degree.. O₂ was excited in a
 high-d. ***plasma*** which was kept apart from the substrate.
 Excited O₂ reacted with TEOS gas to generate reactive intermediates.
 The adsorbed intermediates migrated sufficiently for conformal
 coverage on the substrate surface and were ***photoexcited*** to
 produce SiO₂ films. All steps were successfully planarized with the
 high-quality SiO₂ film. The planarization was explained to be
 attained by low activation energy migration using a site-by-site
 migration model.
 KW planarized ***deposition*** silicon dioxide;
 photoassisted ***plasma*** ***deposition*** silicon
 dioxide; ethylorthosilicate silicon dioxide ***deposition***;
 chem vapor ***deposition*** silicon dioxide
 IT Electric insulators and Dielectrics
 (silica films, planarization with)
 IT ***78-10-4***, Tetraethylorthosilicate
 (in planarized ***deposition*** of silicon dioxide films by
 photoassisted ***plasma*** chem. vapor
 deposition)
 IT ***7631-86-9***, Silicon dioxide, uses and miscellaneous
 (planarized ***deposition*** of, by ***photoassisted***
 plasma chem. vapor ***deposition***,
 tetraethylorthosilicate in)
 IT ***78-10-4*** 7803-62-5, Silicon tetrahydride, uses and
 miscellaneous
 (***plasma*** ***deposition*** of silica films from, IR
 irradiation in)
 IT ***7631-86-9***, Silica, uses and miscellaneous
 (***plasma*** ***deposition*** of, IR irradiation enhancement
 of)
 IT 7440-21-3, Silicon, reactions
 (***plasma*** etching of, IR irradiation for enhancement of)



102
 ref.

Jun. 20, 1988
CVD METHOD

L29: 2 of 3

INVENTOR: YUKO HIURA
ASSIGNEE: NEC CORP
APPL NO: 61-295326
DATE FILED: Dec. 10, 1986
PATENT ABSTRACTS OF JAPAN
JBS GRP NO: E675
JBS VOL NO: Vol. 12, No. 407
JBS PUB DATE: Oct. 27, 1988
NT-CL: H01L 21*20; H01L 21*263

TEOS + laser → SiO₂ CVD layer

ABSTRACT:

PURPOSE: To obtain a multilayer laminated structure of thin films during a

3-147314

Jun. 20, 1988
CVD METHOD

L29: 2 of 3

small number of production processes and at a good yield rate by a method wherein a CVD method is executed by decomposing one raw gas in succession at different temperatures so that the need to substitute the raw gas in one reaction chamber can be eliminated.

CONSTITUTION: In the case of a CVD method which is used to laminate more than two types of thin films on a substrate 1, the CVD method is executed without substituting a raw gas during the formation of each thin film and by successively changing the temperature of the substrate 1 to the decomposition temperature at which each thin film can be formed. For example, after the temperature of a heater 3 has been set at lower than 650.degree.C and TEOS 4 has been introduced, an Ar laser 7 is projected at an intensity of several kW/cm.sup.2, and the temperature of the illuminated part is raised to 750.degree.C which is the temperature value to form an

3-147314

Jun. 20, 1988
CVD METHOD

L29: 2 of 3

SiO₂ sub. 2 layer as a first layer so that SiO₂ sub. 2 can be processed by the CVD method. Then, the intensity of an Ar laser 7 is raised to approx. 100 kW/cm.sup.2 and the substrate 1 is illuminated so as to form a polysilicon layer on the SiO₂ sub. 2 layer; after that, the intensity of the Ar laser 7 is raised to several MW/cm.sup.2 and the substrate is illuminated; the surface of the polysilicon layer is melted and only the surface is transformed into monocrystalline silicon.

=> d ti ccls fd in as kwic 1,3,7,18,22

US PAT NO: 5,230,925 [IMAGE AVAILABLE] L9: 1 of 45
TITLE: Gas-phase growing method and apparatus for the method
US-CL-CURRENT: 427/255.3, 255.1, 255.2, 294
DATE FILED: Jun. 24, 1991
INVENTOR: Toshimitsu Ohmine, Tokyo, Japan
ASSIGNEE: Kabushiki Kaisha Toshiba, Kawasaki, Japan (foreign corp.)

SUMMARY:

18 AUG 93 10:02:29 U.S. Patent & Trademark Office P0111

US PAT NO: 5,230,925 [IMAGE AVAILABLE] L9: 1 of 45

BSUM(8)

Recently, . . . reported that the problem shown in FIG. 13 can be solved by using a combination of both tetra ethoxyl silane (TEOS) and ozone as a raw gas. Even if this method is effective in solving the problem, the effect is limited to the case where SiO₂ is grown. The method does not provide any guarantee of solution to the problem if a different material, such as SiN is grown.

US PAT NO: 5,212,116 [IMAGE AVAILABLE] L9: 3 of 45
TITLE: Method for forming planarized films by preferential etching of the center of a wafer
US-CL-CURRENT: 437/228; 156/654; 437/235, 245
18 AUG 93 10:02:39 U.S. Patent & Trademark Office P0112

US PAT NO: 5,212,116 [IMAGE AVAILABLE] L9: 3 of 45
DATE FILED: Feb. 28, 1992
INVENTOR: Chen-Hua D. Yu, Allentown, PA
ASSIGNEE: AT&T Bell Laboratories, Murray Hill, NJ (U.S. corp.)

DETDESC:

DETD(9)

Applicants . . . Referring to FIG. 6, there is shown a deposition reactor 103 that may be used for depositing various materials including silicon dioxide in accordance with an illustrative embodiment of the invention. Reactor 103 includes generally parallel electrodes 101 and 105 between which. . . and supports silicon substrate 11 upon which a dielectric layer 13 is to be deposited. The silicon component of the silicon dioxide for deposition is obtained from gaseous TEOS derived from a heated
18 AUG 93 10:02:51 U.S. Patent & Trademark Office P0113

US PAT NO: 5,212,116 [IMAGE AVAILABLE] L9: 3 of 45

DETD(9)

Liquid source not shown. Typically, TEOS is commercially available as a liquid and a vaporized form may be obtained by bubbling helium from a source through the liquid TEOS and deriving vaporized molecules from the TEOS. Preferably also included in the plasma atmosphere is oxygen gas that may be derived from a separate source. Various flow meters and other apparatus for injecting controlled amounts of the desired gases are known in the art and for the sake of brevity have not been shown or described. Enclosure 107 surrounds. . . of apertures in the actual machine. Baffle plate 115 is positioned within the center of shower head 105. As the TEOS and oxygen gases, denoted by reference numeral

117, are introduced into shower head 105, they strike baffle plate 115 and flow outwardly (radially).

18 AUG 93 10:03:03

U.S. Patent & Trademark Office

P0114

US PAT NO: 5,153,701 [IMAGE AVAILABLE] L9: 7 of 45
TITLE: Semiconductor device with low defect density oxide
US-CL-CURRENT: 257/635, 411
DATE FILED: May 25, 1990
INVENTOR: Pradip K. Roy, Allentown
ASSIGNEE: AT&T Bell Laboratories, Murray Hill, NJ (U.S. corp.)

DETDESC:

DETD(27)

The LPCVD SiO₂.sub.2 deposition onto the grown SiO₂.sub.2 layer was done at a pressure 0.26 torr by the pyrolysis of TEOS at 635.degree. C. The deposition equipment is similar to the LPCVD system described in detail by A. C. Adams and. . . in the Journal of Electrochemical Society, 126, 18 AUG 93 10:03:14 U.S. Patent & Trademark Office P0115

US PAT NO: 5,153,701 [IMAGE AVAILABLE] L9: 7 of 45

DETD(27)

pp. 1042-1046, June 1979. In a typical deposition sequence, wafers with thermally grown SiO₂.sub.2 were loaded and the reaction tube was evacuated to 0.02 torr. Immediately following loading, a temperature drop of 70.degree. C. . . to stabilize. The system was then subjected to an additional soaking for 4 minutes under 0.02 torr. Immediately following soaking, TEOS Vapor was introduced. The flow rate was controlled by the Liquid TEOS source temperature, typically 35.degree. C. A temperature controller maintained optimum conditions and a deposition rate of 1.4 nm/minute. LPCVD pressure was maintained at 0.260 torr during SiO₂.sub.2 deposition by a pressure control system which used the butterfly valves of the capacitance manometer. The pyrolytic decomposition temperature, 635.degree. . . by a furnace temperature controller. The inter-wafer spacing, which is another variable that can affect the film uniformity and 18 AUG 93 10:03:27 U.S. Patent & Trademark Office P0116

US PAT NO: 5,153,701 [IMAGE AVAILABLE] L9: 7 of 45

DETD(27)

the SiO₂.sub.2 deposition rate, was 0.95 cm. A deposition time of 3.6 minutes was required for a 5 nm thick deposited oxide. . . Further lowering of the deposition rate without sacrificing uniformity can easily be attained by reducing the deposition temperature and/or the Liquid TEOS source temperature. At the end of the deposition, the butterfly valves were closed and the reactor was evacuated to 0.02. . . torr for 3 minutes. The system was then purged with O₂.sub.2 at 0.5 liters/minute for 8 minutes to remove undecomposed TEOS from the tube. The tube was then backfilled with N₂.sub.2 and the wafers were withdrawn.

US PAT NO: 5,028,566 [IMAGE AVAILABLE] L9: 18 of 45
TITLE: Method of forming silicon dioxide glass films
18 AUG 93 10:03:40 U.S. Patent & Trademark Office P0117

US PAT NO: 5,028,566 [IMAGE AVAILABLE] L9: 18 of 45
US-CL-CURRENT: 437/238; 148/DIG.118; 423/336, 337; 427/255.1, 255.2, 255.3; 437/235, 240
DATE FILED: Jul. 27, 1990
INVENTOR: Andre Lagendijk, Oceanside, CA
ASSIGNEE: Air Products and Chemicals, Inc., Allentown, PA (U.S. corp.)

SUMMARY:

RSUM(5)

Thus, the deposition of doped and undoped **silicon oxide** films is an important process in semiconductor device fabrication. **silicon** source usually is a toxic and pyrophoric **gas**. The use of safer **liquid** sources is the goal of many investigators. F. S. Becker and D. Pawlik, ECS 85-2 (85)380, ECS 86-8 p148 "A New LPCVD Borophosphosilicate Glass Process
18 AUG 93 10:03:51 U.S. Patent & Trademark Office P0118

US PAT NO: 5,028,566 [IMAGE AVAILABLE] L9: 18 of 45

BSUM(5)
Based on the Doped Deposition of **TEOS-Oxide**". G. Smolinsky and T. P. H. F. Wendling, JECS 132(85)950 "Measurement of the Temperature Dependent stress of **Silicon Oxide** Films Prepared by a Variety of CVD Methods". G. Smolinsky and R. E. Dean "LPCVD of **Silicon Oxide** Films in the Temperature Range of 410.degree. to 600.degree. C. from Diacetoxysilane". F. S. Becker, D. Pawlik, H. Schaefer, and G. Staudigl, JVST B4(86)232 "Process and Film Characterization of Low Pressure **TEOS-Borophosphosilicate** Glass". D. S. Williams and E. A. Dein "LPCVD of Borophosphosilicate Glass from Organic Reactants". The thermal decomposition of tetraethoxysilane (TESO) has been used for over twenty years to obtain undoped **silicon dioxide** films in the temperature range from 600.degree. to 800.degree. C., A. Hochberg and D. O'Meara "LPCVD of **Silicon Dioxide** Films from Tetraethoxysilane". An excellent text on
18 AUG 93 10:04:05 U.S. Patent & Trademark Office P0119

US PAT NO: 5,028,566 [IMAGE AVAILABLE] L9: 18 of 45

BSUM(5)
the various processes for deposition of thin films is Thin Film Processes edited. . .

DETDESC:

DETD(3)

For glass deposition, silane with oxygen has long been used to deposit **SiO₂** from 350.degree. C. to 450.degree. C. in both atmospheric and subatmospheric reactors. These oxides have poorer step coverage than those made from **TEOS** and silane is a very hazardous material. Other disadvantages of silane processes are **gas** phase reactions which generate particulates and loosely adhering deposits on reactor walls that act as
18 AUG 93 10:04:15 U.S. Patent & Trademark Office P0120

US PAT NO: 5,028,566 [IMAGE AVAILABLE] L9: 18 of 45

DETD(3)

particle sources. The as-deposited films. . . to improve their electrical characteristics. With the drive towards submicron feature sizes and high aspect ratio geometries, the use of **liquid** organosilicon sources like **tetraethyloxysilicate (TEOS)** has increased dramatically in the past few years. The superior step coverage and higher purity of this material relative to silane has become critical to the fabrication of VLSI devices. **TEOS** also has significant safety advantages over silane, a pyrophoric toxic **gas**.

US PAT NO: 5,000,113 [IMAGE AVAILABLE] L9: 22 of 45
18 AUG 93 10:04:25 U.S. Patent & Trademark Office P0121

US PAT NO: 5,000,113 [IMAGE AVAILABLE] L9: 22 of 45
TITLE: Thermal CVD/PECVD reactor and use for thermal chemical vapor deposition of silicon dioxide and in-situ multi-step planarized process

US-CL-CURRENT: 118/723, 715, 725, 729; 156/345; 204/298.01, 298.07, 298.09, 298.23

DATE FILED: Dec 19, 1986

INVENTOR: David N. Wang, Cupertino, CA
John M. White, Hayward, CA
Kam S. Law, Union City, CA
Cissy Leung, Union City, CA
Salvador P. Umotoy, Pittsburg, CA
Kenneth S. Collins, San Jose, CA
John A. Adamik, San Ramon, CA
Ilya Perlov, Mountain View, CA
Dan Maydan, Los Altos Hills, CA

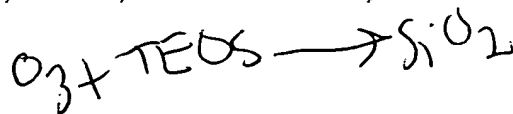
18 AUG 93 10:04:37

U.S. Patent & Trademark Office

P0122

US PAT NO: 5,000,113 [IMAGE AVAILABLE] L9: 22 of 45
ASSIGNEE: Applied Materials, Inc., Santa Clara, CA (U.S. corp.)

DETDESC:



DETD(103)

The thermal chemical **vapor** deposition of highly conformal **silicon dioxide** is an improvement of methods which use the pyrolysis of **TEOS** and oxygen. The present thermal CVD invention is based in part upon the discovery that improved highly conformal (.about.100%) **silicon dioxide** coatings are formed by the thermal chemical **vapor** deposition of the reactants **TEOS** and ozone at relatively low temperatures, using **lamp** radiant heating to provide a wafer temperature of about 200.degree. .degree. C.-500.degree. C., and high pressures. The ozone lowers the

18 AUG 93 10:04:48

U.S. Patent & Trademark Office

P0123

US PAT NO: 5,000,113 [IMAGE AVAILABLE] L9: 22 of 45

DETD(103)

activation energy of the reaction kinetics and forms **silicon dioxide** with the **TEOS** at the relatively low temperatures of about 200.degree. C. to 500.degree. C. A commercially available high pressure, corona discharge ozone generator is used to supply a mixture of (4-8) weight percent ozone in oxygen to the gas distributor. Helium carrier **gas** is bubbled through **liquid TEOS** to **vaporize** the **TEOS** and supply the diluted **gaseous TEOS** in the He carrier to the **gas** distributor.

=>

d ti ccls fd in as kwic 2,38,48,49,54,68

US PAT NO: 4,924,279 [IMAGE AVAILABLE] L15: 2 of 108
TITLE: Thin film transistor
US-CL-CURRENT: 257/58, 60
DATE FILED: May 10, 1984
18 AUG 93 10:47:31 U.S. Patent & Trademark Office P0328

US PAT NO: 4,924,279 [IMAGE AVAILABLE] L15: 2 of 108
INVENTOR: Masafumi Shimbo, Tokyo, Japan
ASSIGNEE: Seiko Instruments Inc., Japan (foreign corp.)
DATE FILED: May 10, 1984

DETDESC:

DETD(9)

FIGS. . . . for injecting carriers into current-conducting paths defined by an a-Si film 5 which is described hereinafter. In FIG. 4b, a SiO₂ sub.2 film 17 as a spacer insulator film and a second main electrode thin film 3 are deposited and selectively etched to form an island structure on the first main electrode thin film 2. The SiO₂ sub.2 film 17 is deposited at a lower temperature by a Plasma chemical vapor deposition (PCVD) method or Photo-assisted CVD method, and the thickness thereof is about 1

18 AUG 93 10:47:42 U.S. Patent & Trademark Office P0329

US PAT NO: 4,924,279 [IMAGE AVAILABLE] L15: 2 of 108

DETD(9)

.mu.m.

US PAT NO: 4,714,668 [IMAGE AVAILABLE] L15: 38 of 108
TITLE: Method for patterning layer having high reflectance using photosensitive material
US-CL-CURRENT: 430/316; 156/652, 653, 659.1; 430/272, 275, 276, 278, 317, 318, 323

DATE FILED: Jun 24, 1986
INVENTOR: Tsunehisa Uneno, Tokyo, Japan
Yutaka Kamata, Yokohama, Japan
Sinji Miyazaki, Yokohama, Japan
ASSIGNEE: Tokyo Shibaura Denki Kabushiki Kaisha, Japan (foreign corp.)
18 AUG 93 10:47:52 U.S. Patent & Trademark Office P0330

US PAT NO: 4,714,668 [IMAGE AVAILABLE] L15: 38 of 108
DATE FILED: Jun 24, 1986

DETDESC:

DETD(15)

A light-absorbing material having such a nonstoichiometrical composition may be prepared by various techniques well known per se in the art such as Plasma chemical vapor deposition (Plasma CVD), photochemical vapor deposition (Photo-CVD), or ion plating. For example, the silicon nitride is prepared from a mixture of silane and ammonium by Plasma CVD or Photo-CVD. The silicon nitride may also be

US PAT NO: 4,714,668 [IMAGE AVAILABLE] L15: 38 of 108

DETD(15)

above-mentioned techniques. The aluminum oxide may be conveniently prepared by ion plating in an oxygen-containing atmosphere using aluminum as a plating source. Amorphous silicon is prepared from silane by **Plasma CVD** or **Photo-CVD**.

DETD(DESC):

DETD(34)

As has been described above, the principle of the present invention utilizes the fact that a **Plasma CVD** silicon nitride film, a **Photo-CVD** silicon nitride film, an amorphous **silicon** film, a **silicon oxide** film or silicon nitride film formed by ion plating, or an aluminum oxide film
18 AUG 93 10:48:13 U.S. Patent & Trademark Office P0332

US PAT NO: 4,714,668 [IMAGE AVAILABLE] L15: 38 of 108

DETD(34)

each has different spectral characteristics and different nontransparent wavelengths for **ultraviolet** or for **ultraviolet** radiation depending upon their deposition conditions. Utilizing this, a **light** absorbing film which has a sufficiently low ratio of transmitted **light** intensity to incident **light** intensity which is negligible with respect to the exposure sensitivity of the photoresist film is formed between a layer to be patterned and a photoresist film. Accordingly, **light** transmitted through the photoresist film is decreased in intensity while passing through the **light** absorbing film. Even if the **light** is reflected by the layer to be patterned the reflected **light** is decreased in intensity in the **light** absorbing film again. Even if exposure **light** becomes incident on the photoresist film again, the reflected **light** can only provide negligible effects on the spectral characteristics of the photoresist. Thus,
18 AUG 93 10:48:27 U.S. Patent & Trademark Office P0333

US PAT NO: 4,714,668 [IMAGE AVAILABLE] L15: 38 of 108

DETD(34)

reflected **light** from the layer to be patterned may not be substantially present and standing waves may not be produced.

CLAIMS:

CLMS(1)

What . . .
support of said layer, wherein said layer is conductive and includes an inclined surface portion;
directly forming on said layer a **light**-absorbing film having a ratio of transmitted **light** intensity to exposing incident **light** intensity of not more than 30%; said film covering the inclined surface portion of said
18 AUG 93 10:48:36 U.S. Patent & Trademark Office P0334

US PAT NO: 4,714,668 [IMAGE AVAILABLE] L15: 38 of 108

CLMS(1)

layer, said film comprising at least one **light** absorbing material selected from a group consisting of **silicon oxide** and aluminum **oxide**, said **silicon oxide** and aluminum **oxide** having nonstoichiometric compositions, said **light** absorbing material being formed by **Plasma CVD**, **Photo-CVD** or ion plating.

forming a photosensitive material film on said **light**-absorbing film;
irradiating a selected region of said photosensitive material film with the
exposing incident **light**;
developing said photosensitive material film to form a first pattern;
selectively etching said **light**-absorbing film using said first pattern
as a mask so as to form a second pattern; and
selectively etching said layer having. . .

18 AUG 93 10:48:48

U.S. Patent & Trademark Office

P0335

US PAT NO: 4,668,840 [IMAGE AVAILABLE] L15: 48 of 108
TITLE: Photovoltaic device
US-CL-CURRENT: 136/244, 258; 437/2, 173, 181
DATE FILED: Jun. 27, 1985
INVENTOR: Seiichi Kiyama, Osaka, Japan
Hitoshi Kihara, Osaka, Japan
Hideki Imai, Osaka, Japan
ASSIGNEE: Sanyo Electric Co., Ltd., Japan (foreign corp.)
DATE FILED: Jun. 27, 1985

DETDESC:

DETD(8)

Furthermore, a preferred forming method for the insulating adiabatic layer 8
18 AUG 93 10:48:58 U.S. Patent & Trademark Office P0336

US PAT NO: 4,668,840 [IMAGE AVAILABLE] L15: 48 of 108

DETD(8)

in addition to the **laser CVD** method, is the **Plasma CVD**
method. More particularly, the raw material gas mentioned above is fed into a
glow-discharge apparatus and the portions of the. . . excited. According
to the method, the raw material gas is decomposed by the plasma and the
insulating adiabatic layer of **SiO₂** or **Si₃N₄** can be
readily formed selectively through the mask.

US PAT NO: 4,665,374 [IMAGE AVAILABLE] L15: 49 of 108
TITLE: Monolithic programmable signal processor using PI-FET taps
US-CL-CURRENT: 333/196; 257/254, 416; 310/313R; 333/154, 166; 364/821
DATE FILED: Dec. 20, 1985
INVENTOR: Mohammed A. Fathimulla, Columbia, MD
18 AUG 93 10:49:09 U.S. Patent & Trademark Office P0337

US PAT NO: 4,665,374 [IMAGE AVAILABLE] L15: 49 of 108
ASSIGNEE: Allied Corporation, Morristown, NJ (U.S. corp.)
DATE FILED: Dec. 20, 1985

DETDESC:

DETD(7)

In fabricating the devices shown in FIGS. 1 and 2, the **SiO₂**
insulating layer 50 is deposited on the InP substrate 35 via, for example,
Plasma CVD, or **UV-CVD**. The ZnO layer 55 can be deposited on
the insulator layer 50 using for example either **Plasma CVD** or
sputtering techniques.

US PAT NO: 4,660,062 [IMAGE AVAILABLE] L15: 54 of 108
18 AUG 93 10:49:17 U.S. Patent & Trademark Office P0338

US PAT NO: 4,660,062 [IMAGE AVAILABLE] L15: 54 of 108
TITLE: Insulated gate transistor having reduced channel length
US-CL-CURRENT: 257/345, 384
DATE FILED: Sep. 16, 1983
INVENTOR: Junichi Nishizawa, Miyagi, Japan
Tadahiro Ohtsuki, Miyagi, Japan

ASSIGNEE: Handotai Kenkyu Shinkokai, Miyagi, Japan (foreign corp.)
DATE FILED: Sep. 16, 1983

DETDESC:

DETD(32)

Another . . . higher temperature, the implanted impurities are completely activated to form a highly doped n.sup.+ or p.sup.+ layer 94. Subsequently, a
18 AUG 93 10:49:29 U.S. Patent & Trademark Office P0339

US PAT NO: 4,660,062 [IMAGE AVAILABLE] L15: 54 of 108

DETD(32)

SiO₂ sub.2 or PSG film 98 is formed on the MoSi₃ sub.2 layer by atmospheric CVD, low pressure CVD, Plasma CVD or Photo-excited CVD (FIG. 9A). The ordinary CVD process using N₂ sub.2 -SiH₄ sub.4 -N₂ sub.2 O gas requires heating at between about 600.degree. and 800.degree.. . . can be reduced to between 300.degree. and 400.degree. C. by using N₂ sub.2 -SiH₄ sub.4 -O₂ sub.2 gas. Following a photo-lithographic step, the SiO₂ sub.2 or PSG film 98 is removed by reactive ion etching (RIE). The exposed MoSi₃ sub.2 and Si layers are etched away. . .

US PAT NO: 4,581,248 [IMAGE AVAILABLE] L15: 68 of 108
TITLE: Apparatus and method for laser-induced chemical vapor deposition

18 AUG 93 10:49:40 U.S. Patent & Trademark Office P0340

US PAT NO: 4,581,248 [IMAGE AVAILABLE] L15: 68 of 108
US-CL-CURRENT: 427/554; 118/620, 641, 725; 136/258; 427/586
DATE FILED: Mar. 7, 1984
INVENTOR: Gregory A. Roche, 4287 Drybed Ct., Santa Clara, CA 95054
DATE FILED: Mar. 7, 1984

SUMMARY:

BSUM(5)

Because of the difficulties associated with atmospheric chemical vapor deposition, low temperature chemical vapor deposition and Plasma enhanced chemical vapor deposition techniques, interest in photochemically deposited insulating films in which the reaction energy is selectively provided by photons has increased considerably. Previous workers have used both mercury photosensitized reactions and direct photolytic
18 AUG 93 10:49:51 U.S. Patent & Trademark Office P0341

US PAT NO: 4,581,248 [IMAGE AVAILABLE] L15: 68 of 108

BSUM(5)

reactions to deposit silicon dioxide at low temperatures. Mercury lamps provide incoherent ultraviolet strong photons and vacuum ultraviolet weak photons to liberate atomic oxygen from molecular donor molecules by photodissociation. The use of mercury lamps causes the entire.

=>

d 120 ti ccls fd in as kwic 1

US PAT NO: 5,234,780 [IMAGE AVAILABLE] L20: 1 of 28
TITLE: Exposure mask, method of manufacturing the same, and exposure
method using the same
US-CL-CURRENT: 430/5; 250/492.1, 492.2; 378/35; 430/290, 313, 321
DATE FILED: Jan. 18, 1990
INVENTOR: Akihiro Nitayama, Kawasaki, Japan
Makoto Nakase, Tokyo, Japan
Kouji Hashimoto, Yokohama, Japan
Hirotsugu Wada, Tokyo, Japan
ASSIGNEE: Kabushiki Kaisha Toshiba, Kawasaki, Japan (foreign corp.)
DATE FILED: Jan. 18, 1990

DETDESC:
18 AUG 93 11:01:16 U.S. Patent & Trademark Office P0377

US PAT NO: 5,234,780 [IMAGE AVAILABLE] L20: 1 of 28

DETD(24)

As shown in FIG. 6A, an additional **light**-transmitting layer 31 is deposited on a mask substrate 30 consisting of, for example, quartz. In order to shift the phase of transmitted **light** by 180.degree., the thickness of the **light**-transmitting layer 31 is set to be $\lambda/(2(n-1))$, provided that the wavelength of the **light** source is λ , and the refractive index of the **light**-transmitting layer 31 is n . If, for example, an i-ray is used as a **light** source, and the **light**-transmitting layer 31 consists of an **SiO**.sub.2 film. The thickness of the film is about 400 nm. Subsequently, a **light**-shielding layer 32 consisting of chromium or chromium oxide is deposited on the resultant structure to a thickness of about 100 nm. A polysilicon film, a room-temperature liquid-phase-grown **SiO**.sub.2 film, or a **Plasma CVD SiO**.sub.2 film 35 is

18 AUG 93 11:01:29 U.S. Patent & Trademark Office P0378

US PAT NO: 5,234,780 [IMAGE AVAILABLE] L20: 1 of 28

DETD(24)

deposited on the resultant structure. Thereafter, a resist 36 is coated, and patterning is performed by EB. . .

DETDESC:

DETD(94)

As shown in FIG. 18A, a **light**-shielding layer 101 consisting of, for example, chromium or chromium oxide is deposited on the entire surface of a mask substrate. . . quartz to a thickness of about 100 nm. After a resist 102 is coated on the entire surface of the **light**-shielding layer 101, patterning is performed by EB drawing or the like. As shown in FIG. 18B, the **light**-shielding layer 101 is removed by reactive ion etching using the

18 AUG 93 11:01:40 U.S. Patent & Trademark Office P0379

US PAT NO: 5,234,780 [IMAGE AVAILABLE] L20: 1 of 28

DETD(94)

pattern formed by the resist 102 as a mask. The . . . a CHF.sub.3 -O.sub.2 gas mixture so as to form a groove 103 having a depth of about 100 nm. An SiO.sub.2 film 104 is deposited on the entire surface of the resultant structure by Plasma CVD.

=>

d ti ccls fd in as kwic 17,27

US PAT NO: 4,994,855 [IMAGE AVAILABLE] L21: 17 of 52
TITLE: Electrophotographic image formation apparatus with two bias voltage sources
US-CL-CURRENT: 355/211, 217, 219, 271
DATE FILED: May 26, 1988
INVENTOR: Kunio Ohashi, Nara, Japan
18 AUG 93 11:21:50 U.S. Patent & Trademark Office P0470

US PAT NO: 4,994,855 [IMAGE AVAILABLE] L21: 17 of 52
Yoshikazy Fujiwara, Nara, Japan
Shiro Narikawa, Nara, Japan
Shoichi Nagata, Nara, Japan
Kazuki Wakita, Osaka, Japan
Takashi Hayakawa, Nara, Japan
ASSIGNEE: Sharp Kabushiki Kaisha, Osaka, Japan (foreign corp.)
DATE FILED: May 26, 1988

DETDESC:

DETD(30)

As . . . problem of providing a photoreceptor with which a contrasty image can be obtained even with a relatively small amount of light energy and relates to an improved photoreceptor of the type comprising an
18 AUG 93 11:22:01 U.S. Patent & Trademark Office P0471

US PAT NO: 4,994,855 [IMAGE AVAILABLE] L21: 17 of 52

DETD(30)

electroconductive supporting member and an amorphous silicon layer which increases its electrical resistance when exposed to light and characterized in that this amorphous silicon layer is formed with a plurality of layers each changing its resistance at a different rate when exposed to light. FIG. 17 is a sectional view showing the layer structure of such a photoreceptor embodying the present invention and numeral. . . are formed two amorphous silicon layers 61 and 62 as well as a surface protective layer 64. For effectively utilizing light energy, an antireflective layer (not shown) may also be provided. The protective layer 64 is for stability against environmental effects, . . . any known material for the purpose. Since it is to be formed on an amorphous silicon layer formed by a Plasma chemical vapor deposition (CVD) method, it is preferable that the protective layer 64 also be formed by a Plasma CVD method. It may comprise, for
18 AUG 93 11:22:15 U.S. Patent & Trademark Office P0472

US PAT NO: 4,994,855 [IMAGE AVAILABLE] L21: 17 of 52

DETD(30)

example, a-Si.sub.3 N.sub.4 :H, a-SiC:H or a-SiO.sub.2 :H. A thickness on the order of 0.01-3.mu.m is preferred.

US PAT NO: 4,954,867 [IMAGE AVAILABLE] L21: 27 of 52
TITLE: Semiconductor device with silicon oxynitride over refractory metal gate electrode in LDD structure
US-CL-CURRENT: 257/639; 148/DIG.114; 257/412; 437/44

DATE FILED: Jun. 1, 1988
INVENTOR: Takashi Hosaka Tokyo, Japan
ASSIGNEE: Seiko Instruments Inc., Japan (foreign corp.)
DATE FILED: Jun. 1, 1988

18 AUG 93 11:22:25

U.S. Patent & Trademark Office

P0473

US PAT NO: 4,954,867 [IMAGE AVAILABLE]

L21: 27 of 52

DETD(2)

DETD(2)

The . . . metal such as Mo and W. The essential point of the present invention resides in producing a transistor having LDD (lightly doped drain) structure by the aid of a silicon oxynitride film formed so as to cover the top and sides. . . and a silicon oxynitride layer 4, as shown in FIG. 1(a). The gate insulation layer 2 is usually composed of silicon oxide formed by the oxidation method. The silicon oxide film can also be formed by the CVD method, or any other insulation layer other than silicon oxide can be used. The layer 3 of high melting point metal such as Mo and W is formed by the . . . by reacting gaseous silane (SiH_4), nitrous oxide (N_2O), and ammonia (NH_3) with one

18 AUG 93 11:22:37

U.S. Patent & Trademark Office

P0474

US PAT NO: 4,954,867 [IMAGE AVAILABLE]

L21: 27 of 52

DETD(2)

another at 0.degree.-600.degree. C. in a Plasma CVD or a Photo CVD apparatus. It may also be formed by the PVD method, in which case sputtering is performed using silicon oxynitride itself. . .

DETD(2)

DETD(8)

The . . . Therefore, it does not necessarily need to be a single layer, but it may be combined with a layer of SiO_2 or Si_3N_4 . The first silicon oxynitride layer 4 or the second silicon oxynitride layer 6 may be replaced by. . . a CVD apparatus, or by reacting gaseous SiH_4 and NH_3 with each other at 0.degree. to 600.degree. C. in a Plasma

18 AUG 93 11:22:47

U.S. Patent & Trademark Office

P0475

US PAT NO: 4,954,867 [IMAGE AVAILABLE]

L21: 27 of 52

DETD(8)

CVD apparatus or Photo CVD apparatus. It may also be formed by the PVD process, in which case sputtering is performed using silicon nitride layer. . .

=>

ANSWER 7 OF 10 COPYRIGHT 1993 ACS *refn*
AI 0109(8):65123f
TI low-temperature polysilicon TFT with two-layer gate insulator using
photo - ***CVD*** and APCVD silicon dioxide
AU Mimura, Akio; Suzuki, Takashi; Konishi, Nobutake; Suzuki, Takaya;
Miyata, Kenji
CS Hitachi Res. Lab., Hitachi Ltd.
LO Hitachi 319-12, Japan
SO IEEE Electron Device Lett., 9(6), 290-2
SC 76-3 (Electric Phenomena)
SX 74, 75
DT J
CO EDLEDZ
IS 0193-8576
PY 1988
LA Eng
AB The performance of low-temp. polysilicon thin-film transistors
(TFT's) formed by a 600.degree. process was improved using a
two-layer gate insulator of ***photochem*** -assisted vapor
deposition (***photo*** - ***CVD***) SiO2 and
atm.-pressure chem. vapor ***deposition*** (APCVD) SiO2. The
photo - ***CVD*** SiO2, 100 .ANG. thick, was
deposited on polysilicon followed by the APCVD SiO2 of 1000
.ANG. thickness. The TFT had a lower threshold voltage VTH and
higher field-effect mobility .mu.FE than the conventional TFT with a
single-layer gate SiO2 of APCVD. The former had a VTH of 8.3 V and
.mu.FE of 35 cm2/V.cntdot.s. Hydrogenation by hydrogen
plasma was more effective for the new TFT than for the
conventional one.
KW ***photochem*** vapor ***deposition*** thin film transistor;
chem vapor ***deposition*** thin film transistor; hydrogenation
plasma thin film transistor
IT Hydrogenation
(by hydrogen ***plasma*** , in thin-film transistor
fabrication, properties in relation to)
IT Transistors
(field-effect, insulated-gate, polysilicon, effect of
deposition method and hydrogenation by ***plasma***
on properties of)
IT 1333-74-0
(hydrogenation, by hydrogen ***plasma*** , in thin-film
transistor fabrication, properties in relation to)
IT ***78-10-4*** , Tetra ethoxy silane
(***photochem*** . decompn. of, silica film ***deposition***

TK7880 . I2L

LG ANSWER 12 OF 14 COPYRIGHT 1993 ACS
 AN 6886(22)164238k
 TI Low-temperature thermofield treatment of ***plasma*** -grown
 silicon dioxide films
 AU Virtmanis, A.; Faltins, I.; Freiberga, L.; Eglitis, I.; Eimanis, I.
 CE Fiz.-Energ. Inst.
 LO Riga, USSR
 SQ Latv. PBR Zinat. Akad. Vestis, Fiz. Teh. Zinat. Ser., (1), 32-5
 SS 76-13 (Electric Phenomena)
 SW 65
 DT J
 CO LZFTA6
 RY 1977
 LA Russ
 AB The activation energy of charge carriers and H diffusion in
 Al-Si-SiO₂ MOS structures heated at 100°C after
 plasma deposition were studied. The diffusion activation
 energy of H⁺ is 0.68 eV and the diffusion coeff. is somewhat greater
 than that of thermally grown SiO₂. The proton diffusion causes
 hysteresis and an increase in the steepness of the
 voltage-capacitance characteristics which depend on the rate of
 change in the shut-off potential. The decompn. of (EtO)₄Si in the
 plasma detcs. the elec. instability assocd. with H₂O
 adsorption.
 KW hydrogen diffusion MOS silica; charge carrier silica MOS;
 capacitance voltage MOS silica
 IT Electric capacitance
 (potential relations with, in silica MOS devices, hydrogen
 diffusion in relation to)
 IT Semiconductor devices
 (silicon MOS, carrier transport and hydrogen diffusion in silica
 films of)
 IT ***78-10-4***
 (decompn. of, in ***plasma***, for silica films for MOS
 devices)
 IT ***7631-86-9***, properties
 (diffusion of hydrogen and elec. carrier motion in, of MOS
 device)
 IT 1333-74-0, properties
 (diffusion of, in silica in MOS device)
 IT 7440-21-3, properties
 (elec. current carrier motion and hydrogen diffusion in silica
 films of MOS devices from)

L7 ANSWER 6 OF 10 COPYRIGHT 1993 ACS Refm
AN CA111(26):246256p
TI Preparation of insulator films in manufacture of integrated circuits
AU Yamazaki, Shunpei; Ito, Kenji
CS Semiconductor Energy Laboratory Co., Ltd.
LO Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
PI JP 01050429 A2 27 Feb 1989 Heisei
AI JP 87-207525 20 Aug 1987
IC ICM H01L021-318
ICS H01L021-94
SC 76-10 (Electric Phenomena)
SX 75
DT P
CO JKXXAF
PY 1989
LA Japan
AB In the process, an even- or smooth-surface insulator film is formed

on a base with an uneven surface by ***UV*** ***photochem***
. vapor ***deposition*** or its mixt. with ***plasma***
chem. vapor ***deposition*** (***CVD***) with the use of a
liq.-form reactive gas. Optionally, the insulator film is Si oxide
formed by ***photochem*** . reaction of SiH₄ and N₂O, or by
plasma ***CVD*** with the use of tetraethoxysilane and
N₂O (or O). The method can form high-quality Si oxide films at fast
rate.

KW integrated circuit insulator film; silicon oxide ***UV***
photochem vapor ***deposition*** ; ***plasma*** chem
vapor ***deposition*** silicon oxide
IT Films

(elec. insulator, chem. vapor ***deposition*** of, in manuf.
of integrated circuits)

IT Electric insulators and Dielectrics
(films, chem. vapor ***deposition*** of, in manuf. of

integrated circuits)

IT ***Ultraviolet*** radiation, chemical and physical effects
(in chem. vapor ***deposition*** of insulator films in manuf.
of integrated circuits)

IT Electric circuits
(integrated, insulator-film chem. vapor ***deposition*** in
manuf. of)

IT ***11126-22-0*** , Silicon oxide
(films, chem. vapor ***deposition*** of, in manuf. of
integrated circuits)

IT ***78-10-4*** 7782-44-7, Oxygen, uses and miscellaneous
7803-62-5, Silane, uses and miscellaneous 10024-97-2, Nitrogen
oxide (N₂O), uses and miscellaneous
(in chem. vapor ***deposition*** of insulator films in manuf.
of integrated circuits)

plasma + UV + TEC

2-27-89

AN CA111(26):246256p
 TI Preparation of insulator films in manufacture of integrated circuits
 AU Yamazaki, Shunpei; Ito, Kenji
 CS Semiconductor Energy Laboratory Co., Ltd.
 LO Japan
 SO Jpn. Kokai Tokkyo Koho, 7 pp.
 PI JP 01050429 A2 27 Feb 1989 Heisei
 AI JP 87-207525 20 Aug 1987
 IC ICM H01L021-318
 ICS H01L021-94
 SC 76-10 (Electric Phenomena)
 SX 75
 DT P
 CO JKXXAF
 PY 1989
 LA Japan
 AB In the process, an even- or smooth-surface insulator film is formed

2-27-89

uv
 $N_2O + TEOS + \text{plasma} \rightarrow SiO_2$
 on

on a base with an uneven surface by ***UV*** ***photochem***
 . vapor ***deposition*** or its mixt. with ***plasma***
 chem. vapor ***deposition*** (***CVD***) with the use of a
 lig-form reactive gas. Optionally, the insulator film is Si oxide
 formed by ***photochem*** . reaction of SiH_4 and N_2O , or by
 plasma ***CVD*** with the use of tetraethoxysilane and
 N_2O (or O). The method can form high-quality Si oxide films at fast
 rate.
 KW integrated circuit insulator film; silicon oxide ***UV***
 photochem vapor ***deposition*** ; ***plasma*** chem
 vapor ***deposition*** silicon oxide
 IT Films
 (elec. insulator, chem. vapor ***deposition*** of, in manuf.
 of integrated circuits)
 IT Electric insulators and Dielectrics
 (films, chem. vapor ***deposition*** of, in manuf. of
 integrated circuits)
 IT ***Ultraviolet*** radiation, chemical and physical effects
 (in chem. vapor ***deposition*** of insulator films in manuf.
 of integrated circuits)
 IT Electric circuits
 (integrated, insulator-film chem. vapor ***deposition*** in
 manuf. of)
 IT ***11126-22-0*** , Silicon oxide

(films, chem. vapor ***deposition*** of, in manuf. of
 integrated circuits)
 IT ***78-10-4*** ***7782-44-7*** , Oxygen, uses and miscellaneous
 7803-62-5, Silane, uses and miscellaneous 10024-97-2, Nitrogen
 oxide (N_2O), uses and miscellaneous
 (in chem. vapor ***deposition*** of insulator films in manuf.
 of integrated circuits)

62-291929

Dec. 18, 1987
FORMATION OF INSULATING FILM

L14: 40 of 67

INVENTOR: KOSAKU YANO, et al. (4)
ASSIGNEE: MATSUSHITA ELECTRIC IND CO LTD
APPL NO: 61-136517
DATE FILED: Jun. 12, 1986
PATENT ABSTRACTS OF JAPAN
ABS GRP NO: E616
ABS VOL NO: Vol. 12, No. 189
ABS PUB DATE: Jun. 2, 1988

62-291929

Dec. 18, 1987
FORMATION OF INSULATING FILM

L14: 40 of 67

INT-CL: H01L 21*306; H01L 21*302; H01L 21*318

ABSTRACT:

PURPOSE:To smoothly coat a wiring step by mixing gas for etching the wiring metal in an insulating film forming material gas, and forming a film while etching it.

CONSTITUTION:Aluminum wirings 10b are formed through an SiO₂ film 10a on a semiconductor substrate 10. Then, one of O₂, N₂, O, NO, N₂ and NH₃ is mixed with SiH₄ or Si₂H₆, and an insulating film is superposed by a CVD method by exciting it with a high frequency, a mercury lamp or a laser. For example, the substrate is

62-291929

Dec. 18, 1987
FORMATION OF INSULATING FILM

L14: 40 of 67

heated to 300.degree.C by a parallel flat plate type Plasma CVD unit, and an SiO₂ film 12 is obtained by feeding predetermined amount of SiH₄, NO₂, CCl₄. In this case, aluminum electrodes 11a', 11b' are etched particularly at the corners with CCl₄ at the initial time of formation, the step coverage is improved. When an aluminum electrode layer 13 is formed thereon, no disconnection occurs.

62-291913

Dec. 18, 1987
FORMATION OF THIN FILM

L14: 42 of 67

INVENTOR: KOSAKU YANO, et al. (4)
ASSIGNEE: MATSUSHITA ELECTRIC IND CO LTD
APPL NO: 61-136520

62-291913

Dec. 18, 1987
FORMATION OF THIN FILM

L14: 42 of 67

DATE FILED: Jun. 12, 1986
PATENT ABSTRACTS OF JAPAN
ABS GRP NO: E616
ABS VOL NO: Vol. 12, No. 189
ABS PUB DATE: Jun. 2, 1988
INT-CL: H01L 21*205; H01L 21*302; H01L 21*31

ABSTRACT:

PURPOSE:To easily deposit a flat film and a film of desired pattern by patterning in advance hydrogenide, oxide or fluoride with volatile material.

CONSTITUTION: An **Si oxide** film 11 is formed on an Si substrate 10,

62-291913

Dec. 18, 1987
FORMATION OF THIN FILM

L14: 42 of 67

and an aluminum electrode 12 and a carbon film 13 are further formed. Then, a resist pattern 14 is formed on the film 13, the films 13, 12 are **Plasma** etched and patterned. Then, an **SiO₂** film is **deposited** as an Si thin film 15. This **deposition** is performed by an optical **CVD** method for emitting a low pressure mercury lamp **light**. The **light** is absorbed to an N₂ to generate atoms, molecules or ions, such as O, O₂. These atoms are reacted with SiH₄ near the surface of the substrate 10 to **deposit** a film 15. However, the atoms, molecules or ions fed to the vicinity of the film 13 are reacted with the film 13 to generate CO, CO₂. The CO, CO₂ are scattered as gases to block the **deposition** of the film 15 on the film 13, thereby obtaining the film 15 in which its **step** is alleviated.

62-118584

May 29, 1987
MANUFACTURE OF OPTICAL SEMICONDUCTOR DEVICE

L14: 46 of 67

INVENTOR: KAZUHIRO SAWA, et al. (2)
ASSIGNEE: MATSUSHITA ELECTRIC IND CO LTD
APPL NO: 60-258922
DATE FILED: Nov. 19, 1985
PATENT ABSTRACTS OF JAPAN
ABS GRP NO: E553
ABS VOL NO: Vol. 11, No. 338
ABS PUB DATE: Nov. 5, 1987
INT-CL: H01L 33*00; H01L 21*316; H01L 21*318; H01L 31*10

ABSTRACT:

PURPOSE: To decrease surface leaking current, by forming an insulating film,

62-118584

May 29, 1987
MANUFACTURE OF OPTICAL SEMICONDUCTOR DEVICE

L14: 46 of 67

by a chemical vapor **deposition** method including projection of **light** on the surface of a compound semiconductor substrate including a P-n junction.

CONSTITUTION: On the surface of a compound semiconductor including an exposed P-n junction, an insulating film 10 is formed by a chemical vapor **deposition** method (optical **CVD** method) including projection of **light**. For example, on an n-type InP substrate 1, epitaxial layers of n-type InP₂, P-type InGaAsP₃, P-type InP₄ and P-type InGaAsP₅ are **sequentially** grown. Then, a silicon nitride film 7 is formed on the P-type InGaAsP₅. A part of said **silicon oxide** film 7 is removed. Au/Ge alloy is evaporated, and a P-side electrode 8 is formed. On the side of the n-type InP substrate 1, Au/Ge alloy is evaporated, and an n-side electrode 9 is formed. The P-side electrode 8 is protected with resist, and

62-118584

May 29, 1987
MANUFACTURE OF OPTICAL SEMICONDUCTOR DEVICE

L14: 46 of 67

etching is performed. Thus a mesa structure is obtained. The resist is removed. Then, a silicon nitride film 10 is formed by the optical **CVD** method to a thickness of 750.Å. A silicon nitride film 11 is formed by a **Plasma CVD** method to a thickness of 1,000.Å. Thus a **light** emitting diode is formed.

61-253870

Nov. 11, 1986

L14: 50 of 67

INVENTOR: TADASHI SAITO, et al. (6)
 ASSIGNEE: HITACHI LTD
 APPL NO: 60-95437
 DATE FILED: May 7, 1985

61-253870

Nov. 11, 1986
 PHOTOVOLTAIC DEVICE

L14: 50 of 67

PATENT ABSTRACTS OF JAPAN
 ABS GRP NO: E494
 ABS VOL NO: Vol. 11, No. 104
 ABS PUB DATE: Apr. 2, 1987
 INT-CL: H01L 31*04

ABSTRACT:

PURPOSE: To prevent radiation damage, by irradiating ultraviolet rays to reacting gas of compound containing at least silicon, in order to form a transparent passivation film on the surface of an Si thin film semiconductor element.

17:30:23

61-253870

Nov. 11, 1986
 PHOTOVOLTAIC DEVICE

L14: 50 of 67

CONSTITUTION: By **Plasma CVD** using SiH.sub.4 as a main source gas, on a substrate 1 having a transparent conducting electrode film 2, a P-type layer 31, i-type layer 32 and N-type layer 33 are **sequentially** formed, on which **SiO.sub.2** is formed by **Photo CVD**. At this time, the substrate temperature may be 300.degree.C, and 185nm ultraviolet rays are irradiated to SiH.sub.4-N.sub.2O reaction gas from an Hg lamp. After an **SiO.sub.2** film is formed, holes 5 are opened therethrough and an electrode is evaporated so that it can be obtained with the N-type Si layer 33 with a low resistance at the holes 5. Thus surface damage can be remarkably reduced and a better photovoltaic device can be provided.

59-190209

Oct. 29, 1984
 PREPARATION OF SILICON **COATING** FILM

L14: 63 of 67

INVENTOR: SHIYUNPEI YAMAZAKI
 ASSIGNEE: KK HANDOUTAI ENERUGII KENKYUSHO
 APPL NO: 58-63389
 DATE FILED: Apr. 11, 1983
 PATENT ABSTRACTS OF JAPAN
 ABS GRP NO: C268
 ABS VOL NO: Vol. 9, No. 45
 ABS PUB DATE: Feb. 26, 1985
 INT-CL: C01B 33*02; C01B 33*04; //H01L 21*205

ABSTRACT:

PURPOSE: To obtain a semiconductor film composed mainly of Si having low

59-190209

Oct. 29, 1984
 PREPARATION OF SILICON **COATING** FILM

L14: 63 of 67

oxygen or oxide concentration, by treating silane with HF to remove **silicon oxide** from the silane in the form of water and SiF.sub.4, and using the silane as a raw material of the objective **coating** film.

CONSTITUTION: In the filling of a silane, e.g. SiH.sub.4, in a bomb, the silane is contaminated with silicon oxide (represented by SiO.sub.2) produced by the reaction of SiF.sub.4 with residual O.sub.2, etc. The above trouble can be prevented as follows: When HF is charged together with SiH.sub.4 in the first vessel, SiF.sub.4 and water are produced by the reaction of formula II. The produced SiH.sub.4 containing impurities is transferred to the second vessel maintained at a cryogenic temperature to effect the trapping of water as a solid and SiF.sub.4, etc. as a liquid or solid in the vessel as shown in formula III. The vessel is maintained at a temperature to vaporize only SiH.sub.4, and the purified

59-190209

Oct. 29, 1984

L14: 63 of 67

PREPARATION OF SILICON COATING FILM

SiH.sub.4 obtained by this process is introduced into a reaction furnace at .1toeq.1atm and subjected to the Photo(Plasma)-Chemical reaction. A semiconductor film composed mainly of Si and having an oxygen or oxide concentration of .1toeq.1.times.10.sup.1.sup.8atom/cc can be formed on the surface of the substrate 1.

=> d his

(FILE 'USPAT' ENTERED AT 16:27:49 ON 17 AUG 93)

SET PAGELength 19

SET LINELENGTH 78

FILE 'JFOABS' ENTERED AT 16:28:59 ON 17 AUG 93

```

L1      574 S TEOS OR TETRAETHYL? OR ETO
L2      45370 S SIO OR (SI OR SILICON? OR POLY OR POLYSI OR POLYSILICON?)(3
L3      208253 S CVD OR DEPOSIT? OR COAT?
L4      76351 S UV OR ULTRA(W)VIOLET? OR U.V. OR LASER? OR EXCIMER? OR PHOT
L5      248325 S LIGHT?
L6      86213 S MICROWAVE? OR PLASMA? OR RF OR DC
L7      242 S L2 AND L3 AND (L4 OR L5) AND L6
L8      2 S L1 AND L7
L9      39151 S (LIQUID? OR SOLN? OR SOLUTION?) AND (GAS? OR VAPOR?)
L10     24 S L9 AND L1
L11     2 S L2 AND L10
L12     22 S L10 NOT L11
L13     379206 S SIMULAN? OR SEQUENT? OR FIRST? OR SECOND? OR STEP?
L14     67 S L13 AND L7

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=>

(FILE 'USPAT' ENTERED AT 16:27:49 ON 17 AUG 93)

SET PAGELENGTH 19

SET LINELENGTH 78

FILE 'JPOABS' ENTERED AT 16:28:59 ON 17 AUG 93

L1 574 S TEOS OR TETRAETHYL? OR ETO
L2 45370 S SIO OR (SI OR SILICON? OR POLY OR POLYSI OR POLYSILICON?)(3
L3 208253 S CVD OR DEPOSIT? OR COAT?
L4 76351 S UV OR ULTRA(W)VIOLET? OR U.V. OR LASER? OR EXCIMER? OR PHOT
L5 248325 S LIGHT?
L6 86213 S MICROWAVE? OR PLASMA? OR RF OR DC
L7 242 S L2 AND L3 AND (L4 OR L5) AND L6
L8 2 S L1 AND L7
L9 39151 S (LIQUID? OR SOLN? OR SOLUTION?) AND (GAS? OR VAPOR?)
L10 24 S L9 AND L1
L11 2 S L2 AND L10
L12 22 S L10 NOT L11
L13 379206 S SIMULAN? OR SEQUENT? OR FIRST? OR SECOND? OR STEP?
L14 67 S L13 AND L7

FILE 'USPAT' ENTERED AT 17:31:28 ON 17 AUG 93

L15 20858 S TEOS OR ETO OR TETRAETHYL?
L16 78155 S SIO# OR (SI OR SILICON? OR POLY OR POLYSI OR POLYSILICON?)(
L17 568268 S LIGHT? OR PHOTO(3W)(CVD OR DEPOSIT? OR COAT?) OR UV OR U V
L18 214680 S PLASMA? OR MICROWAVE? OR RF OR DC OR R F OR D C
L19 451457 S CVD OR C.V.D. OR DEPOSIT? OR COAT?
L20 224 S L16(P)L17(P)(L18(3A)L19)
L21 207234 S (LIQUID? OR AQUEOUS? OR SOLN? OR SOLUTION?)(P)(GAS? OR VAPO
L22 45 S L15(P)L21(P)L16
SAVE TODAYL20/A L20
SAVE TODAYL22/A L22

=>

L12 ANSWER 2 OF 20 COPYRIGHT 1993 ACS
AN CA10269:00425a
TI Composite films
CO Topy Ink Mfg. Co., Ltd.
LC Japan
CC Jpn. Kokai Tokkyo Koho, 5 pp.
DI JP 62061255 A2 9 Apr 1985 Showa
AI JP 82-169326 16 Sep 1983
IC ICM B32B015-08
ICS B32B015-04
CC 38-3 (Plastics Fabrication and Uses)
DT P
CC JKXIAF
PY 1985
LA Japan
AB Transparent laminates with excellent sanitary and gas
barrier properties are prepd. by ***depositing*** or
sputtering silicate, phosphate, and/or borate glass,
vacuum-metalizing, and hot-pressing with a carboxy group-contg.
polyolefin or low temp. ***plasma*** -treated polyolefin film.
Thus, a 12-.mu. biaxially drawn poly(ethylene terephthalate)
[25038-59-9] film was sputter- ***coated*** to thickness 800
.ANG. with a silicate glass contg. SiO2 71, Al2O3 1.0, CaO 13, MgO
1.0, and Na2O and K2O 14%, vacuum-aluminized to thickness 20 .mu.,
and pressed with a 60-.mu. Ryothene M1063-4 [96538-78-2] film at
180.degree. and 5 kg/cm to give a laminate with adhesive strength
1.0 kg/15 mm, O permeation 0.1 mL/m2-24 h-1 atm-25.degree., and
moisture permeation 0.02 g/m2-24 h (40.degree., relative humidity
90%).
KW polyethylene terephthalate film laminate; silica ***deposition***
polyester film; aluminum oxide ***deposition*** polyester film;
calcium oxide ***deposition*** polyester film; magnesium oxide
deposition polyester film; sodium oxide ***deposition***
polyester film; potassium oxide ***deposition*** polyester film;
nylon film laminate; polyethylene film laminate; maleic acid
modified polypropylene film; glass ***deposition*** polyester
film
IT Sputtering
(***coating*** by, of glass, on plastic films, for laminates)
IT Glass, oxide
(***deposits*** , on plastic films, metalized, maleic
acid-modified polypropylene film laminates, transparent, gas-
barrier)
IT Polyamides, uses and miscellaneous
(films, glass- ***deposited*** , metalized, maleic
acid-modified polypropylene film laminates, transparent, gas-
barrier)
IT Plastics, film
(glass- ***deposited*** , metalized, maleic acid-modified
polypropylene film laminates, transparent, gas- ***barrier***)
IT ***7429-90-5*** , uses and miscellaneous
(***coatings*** , on glass- ***deposited*** plastic films,
for laminates, transparent, gas- ***barrier***)
IT 1205-78-8, uses and miscellaneous 1309-48-4, uses and
miscellaneous 1313-59-3, uses and miscellaneous 1344-28-1, uses
and miscellaneous ***7631-86-9*** , uses and miscellaneous
12136-45-7, uses and miscellaneous
(***deposition*** of, on polyamide, polyethylene, or
polyester films, for lamination with maleic acid-modified
polypropylene film)
IT 25038-59-9, uses and miscellaneous
(films, glass- ***deposited*** , metalized, maleic
acid-modified polypropylene film laminates, transparent, gas-

IT ***barrier***)
 0002-82-4
 (films, low temp. ***plasma*** -treated, glass-
 deposited , metalized, maleic acid modified polypropylene
 film laminates, transparent, gas- ***barrier***)
 IT 0002-92-5 00508-78-2
 (films, polyester film laminates, transparent, gas-
 barrier)

L12 ANSWER 4 OF 20 COPYRIGHT 1993 ACS
 AN CA102(4):37083e
 TI Effect of annealing, charge injection, and electron beam irradiation
 on the silicon-silicon dioxide interface ***barrier*** heights
 and on the work function difference in MOS structures
 AU Krawczyk, G.; Garrigues, M.; Mabeut, T.
 CS Lab. Electron., Autom. Mes. Electr., Ec. Cent. Lyon
 LC Ecally 69131, Fr.
 SO AIP Conf. Proc., 122(Phys. VLSI), 39-44
 SC 75-3 (Electric Phenomena)
 DT J
 CO APCPCS
 IS 0094-243X
 PY 1984
 LA Eng
 AB The effects of postmetallization ***forming*** -gas annealing,
 electron ***photoinjection*** , and electron-beam irradiation on the
 effective work function difference (.PHI.ms) and effective interface
 barrier heights at the metal-insulator and
 semiconductor-insulator interfaces (.PHI.m and .PHI.s, resp.) in
 Al-SiO2-Si (MOS) structures were studied. The variations of .PHI.ms
 are generally due to the simultaneous modifications of the
 barrier heights at both interfaces. Special attention is
 paid to the phenomena taking place at the Si-SiO2 interface.
 KW work function MOS structure; silica silicon ***barrier*** MOS
 structure; aluminum silica ***barrier*** MOS structure;
 annealing ***barrier*** MOS structure; ***photoinjection***
 electron MOS structure; electron beam irradiation MOS structure
 IT Semiconductor devices
 (MOS structures, effects of annealing and charge injection and
 electron-beam irradiation on potential ***barriers*** and work
 functions in)
 IT Potential ***barrier***
 (at metal-insulator and semiconductor-insulator interfaces in MOS
 structures, effects of annealing and charge injection and
 electron irradiation on)
 IT Work function
 (in MOS structures, effects of annealing and charge injection and
 electron irradiation on)
 IT Electron, conduction
 (injection of, in MOS structures, potential ***barriers***
 and work function difference in relation to)
 IT Annealing
 (of MOS structures, potential ***barriers*** and work
 function difference in relation to)
 IT Electron beam, ***chemical*** and physical effects
 (on interfacial potential ***barriers*** and work function
 differences in MOS structures)
 IT ***7429-90-5*** , properties 7440-21-3, properties
 7631-86-9 , properties
 (potential ***barriers*** and work function differences in
 MOS structures contg., effects of annealing and charge injection
 and electron irradiation on)

L12 ANSWER 5 OF 20 COPYRIGHT 1993 ACS
 AN CA101(16):135608d
 TI Selective etching of aluminum

AD ...
 CS Massachusetts Institute of Technology
 LO USA
 CO U.S., 5 pp.
 PI US 4462002 A 31 Jul 1984
 AI US 92-454046 3 Jan 1993
 IC C03C015-00
 NCL 2041920002
 SC 50-6 (Nonferrous Metals and Alloys)
 SX 76
 DT P
 CO USNMAM
 PY 1984
 LA Eng
 AD Fine patterns for integrated elec. circuits are prep'd. by collective etching of Al on a substrate. A patterned ***photoresist*** masking on an Al alloy ***coating*** is placed in a radio-frequency ***plasma*** etching chamber. An etchant gas and source of C and Si, preferably SiF4 and C, are introduced to ***deposit*** Si oxide selectively on the mask, while the unmasked Al contg. areas are etched. The oxide ***coating*** is then removed by etching with a ***buffered*** HF soln.
 KW aluminum ***plasma*** etching elec circuit; silicon oxide selective etching aluminum
 IT Sputtering
 (etching, of aluminum, in manuf. of integrated elec. circuits)
 IT Electric circuits
 (integrated, manuf. of, selective ***plasma*** etching of aluminum for)
 IT Etching
 (selective, of aluminum, in manuf. of integrated elec. circuits)
 IT Etching
 (sputter, of aluminum, in manuf. of integrated elec. circuits)
 IT Aluminum alloy, base
 (etching of, selective ***plasma***, in manuf. of integrated elec. circuits)
 IT ***7429-92-5***, uses and miscellaneous
 (etching of, selective ***plasma***, in manuf. of integrated elec. circuits)
 IT ***11125-22-0P***
 (***information*** of, in selective etching of aluminum, in manuf. of integrated elec. circuits)
 IT 7782-44-7, uses and miscellaneous 7783-61-1
 (***plasma*** selective etching in atm. contg., of aluminum, in manuf. of integrated elec. circuits)

L12 ANSWER 6 OF 20 COPYRIGHT 1993 ACS
 AN CA100(16):130950g
 TI An RIE etch ***barrier*** by in situ conversion of a silicon containing alkyl polyamide/polyimide
 AU Gleason, Robert T.; Linde, Harold G.
 CS International Business Machines Corp.
 LO USA
 SO U.S., 7 pp.
 PI US 4430153 A 7 Feb 1984
 AI US 83-509515 30 Jun 1983
 IC H01L021-306; C23F001-02; B44C001-22; C03C015-00
 NCL 155643000
 SC 76-3 (Electric Phenomena)
 DT P
 CO USNMAM
 PY 1984
 LA Eng
 AD An etch ***barrier*** is ***formed*** in the reactive ion etching of an arom. polyamic acid/imide. A surface is ***coated*** with a layer of an arom. polyamic acid. The layer is at least

partially cured to the corresponding arom. polyimide. The surface layer of the arom. polyimide is converted in situ to Si-contg. alkyl polyamide/imide. A layer of ***photoresist*** is applied, exposed, and developed over the Si-contg. alkyl polyamide/imide to selectively expose a portion. The exposed portion is reactively ion etched with CF4. The resultant structure is reactively ion etched with an O agent to etch an interconnect in the arom. polyimide while removing the ***photoresist*** down to the Si-contg. alkyl polyamide/imide surface layer. This exposed surface layer is reacted to convert it to a SiO2 etch ***barrier***. The method is illustrated in the ***formation*** of a semiconductor device interconnect. The substrates were SiO2, Si3N4, and Al, and the arom. polyimide was Dupont PI 5057. The structure was immersed in a soln. of bis(3-aminopropyl)tetramethyl disiloxane in diglyme to convert the arom. polyimide to the corresponding alkyl siloxane.

- KW etch ***barrier*** silicon contg polyamide polyimide; reactive ion etching etch ***barrier*** ; electronics device reactive ion etching; semiconductor device reactive ion etching
- IT Polyimides, uses and miscellaneous
(polyamides-, ***formation*** of reactive-ion-etching etch ***barrier*** by in-situ conversion of silicon-contg.)
- IT Siloxanes and Silicones, uses and miscellaneous
(polyamides-polyimides modified by, in ***formation*** of reactive-ion-etching etch ***barrier*** in electronic-device tech.)
- IT Electric circuits
(integrated, ***formation*** of reactive-ion-etch ***barrier*** in manuf. of)
- IT Electric conductors
(interconnections, ***formation*** of reactive-ion-etching etch ***barrier*** in prodn. of)
- IT Etching
(ion-beam, reactive, ***formation*** of ***barrier*** to, by in-situ conversion of silicon-contg. alkylpolyamide-polyimide)
- IT ***7631-86-9*** , uses and miscellaneous
(etch ***barrier*** , in electronic-device tech., in-situ ***formation*** of)
- IT 75-73-0 7782-44-7, reactions
(etching by, of silicon-contg. alkylpolyamide-polyimide in prodn. of etch ***barrier***)
- IT 919-30-2 2469-55-8 25236-53-7
(in etch- ***barrier*** ***formation*** in electronic-device tech.)
- IT ***7429-90-5*** , uses and miscellaneous ***7631-86-9*** , uses and miscellaneous 12033-89-5, uses and miscellaneous
(substrates, ***formation*** of reactive-ion-etching etch ***barrier*** on, by in-situ conversion of silicon-contg. alkyl polyamide-polyimide)

L12 ANSWER 7 OF 20 COPYRIGHT 1993 ACS

AN CA97(16):137356t

TI Patterning films using reactive ion etching

AU Kinsbron, Eliezer; Levinstein, Hyman J.; Willenbrock, William E., Jr.

CS Bell Telephone Laboratories, Inc.

LC USA

SC U.S., 6 pp.

PI US 4343677 A 10 Aug 1982

AI US 81-246590 23 Mar 1981

IC B44C031-22; H01L021-306; C03C015-00; C23F001-02

NCL 156643000

SC 76-3 (Electric Phenomena)

DT P

CO USNSHAM

PY 1982

LA Eng

AN in the patterning of an org. layer in a very large scale integrated (VLSI) wafer by means of reactive O₂ (or other) an anisotropic etching, build-up of oxides (or other compounds) the sidewalls of apertures ***formed*** In the org. layer are removed prior to etching the material, typically Al, of the VLSI wafer located at the bottom of these apertures, using the patterned org. layer as an etch mask. The build-ups are removed by using a mixt. of ethylene glycol and ***buffered*** HF, a liq. mixt. of NH₄F and HF, or an aq. soln. of KI and I in the cases of etching of Al, Si or SiO₂ or Au, resp.

KW etching integrated circuit; oxygen ion etching circuit; aluminum oxygenation etching resist; silicon oxygenation etching resist; silica oxygenation etching resist; gold oxygenation etching resist; resist ion etching aluminum circuit

IT ***Plasma*** , ***chemical*** and physical effects (etching by oxygen, in patterning of resists in manuf. of very large-scale integrated circuits, removal of build-ups of oxide in)

IT Resist (in etching by oxygen ions in very large-scale integrated-circuit manuf., removal of build-up of oxides in)

IT Etching (reactive oxygen ion, in patterning of org. layers on very large-scale integrated wafer, removal of build-up of oxides on sidewalls of apertures in)

IT Electric circuits (integrated, large-scale, reactive ion etching in patterning of resists for, removal of build-ups of oxides and)

IT 7782-44-7D, ions, reactions (etching by, in very large-scale integrated-circuit manuf., removal of oxide build-up in)

IT ***7429-92-5*** , reactions 7440-57-5, reactions ***7631-86-9*** , reactions (etching of, reactive oxygen-ion, in integrated-circuit manuf.)

IT 107-21-1, uses and miscellaneous 7553-56-2, uses and miscellaneous 7647-01-0, uses and miscellaneous 7681-11-0, uses and miscellaneous 12125-01-8 (in reactive ion etching in manuf. of very large-scale integrated circuits)

IT 75-73-0 (in reactive oxygen ion etching for very large-scale integrated circuits, removal of oxide build-up in)

L12 ANSWER 8 OF 20 COPYRIGHT 1993 ACS

AN CA95(18):160718e

TI Effect of ***forming*** gas anneal on aluminum-silicon dioxide internal ***photoemission*** characteristics

AU Solomon, P. M.; DiMaria, D. J.

CS IBM Thomas J. Watson Res. Cent.

LC Yorktown Heights, NY 10598, USA

SC J. Appl. Phys., 52(9), 5867-9

SC 75-9 (Electric Phenomena)

DT J

CO JAPIAU

IS 0021-8979

FY 1981

LA Eng

AB Internal ***photoemission*** characteristics from the Al-SiO₂ interface are markedly affected by a 400.degree. 20 mm ***forming*** gas (90% N₂ and 10% H₂) anneal. The ***barrier*** height is raised by approx.0.25 eV and the elec. field dependence of the ***photocurrent*** is increased.

KW ***photocond*** aluminum silica interface; hydrogen nitrogen anneal aluminum silica

IT Interface

(aluminum-silicon dioxide, ***photocond*** . at, effect of

IT ***forming*** gas anneal on)
 IT ***Photoconductivity*** and ***Photoconduction***
 (at aluminum-silicon dioxide interface, effect of ***forming***
 gas anneal on)
 IT Potential ***barrier***
 (at aluminum-silicon dioxide interface, ***forming*** gas
 anneal effect on)
 IT ***7601-06-9***, uses and miscellaneous
 (***photocond*** at aluminum interface with, ***forming***
 gas anneal effect on)
 IT 7727-37-0, properties
 (***photocond*** at aluminum-silicon dioxide interface
 anneal in hydrogen and)
 IT 1333-74-0, properties
 (***photocond*** at aluminum-silicon dioxide interface
 anneal in nitrogen and)
 IT ***7429-90-5***, uses and miscellaneous
 (***photocond*** at silicon dioxide interface with,
 forming gas anneal effect on)

L12 ANSWER 9 OF 20 COPYRIGHT 1993 ACS

AN CA95(4):33497g

TI Embossed articles of preset configuration

AU Kostyshin, M. T.; Romanenko, P. F.

LC USSR

SC U.S., 13 pp. Cont. of U.S. Ser. No. 651,138, abandoned.

PI US 4252891 24 Feb 1981

AI US 76-651138 21 Jan 1976

IC 603C005-00

NCL 430323000

CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic
 Processes)

DT P

CO USXXAM

PY 1981

LA Eng

AB Embossed articles of a preset configuration can be manufd. by using
 a material sensitive to electromagnetic or corpuscular radiation.
 The process involves the ***coating*** of a backing with a metal
 layer, applying a ***barrier*** layer to the metal layer,
 coating the ***barrier*** layer with a layer of an
 inorg. material capable of interacting chem. with the metal layer
 and ***forming*** products whose phys. and chem. properties
 differ from the metal layer and the layer of the inorg. material,
 imagewise exposing the material, and removing the unnecessary
 portions of the layers until an embossed article of preset
 configuration is obtained. Thus, a glass plate was ***coated***
 with a layer of Ag 4000 .ANG. thick, ***barrier*** layer of
 arsenic trisulfide 60 .ANG. thick, and a layer of arsenic
 triselenide 600 .ANG. thick. This material was then exposed to a
 He-Ne laser through a stencil and subsequently developed in a 10%
 aq. KOH soln. to give an amplitude phase hologram in the
 form of reflection-type diffraction grating.

KW embossing ***photoimaging*** material; holog recording embossed
 article; laser recording embossed article; diffraction grating
 photoimaging material; ***photomask***
 photoimaging material; hologram ***photoimaging***
 material

IT ***Light*** -sensitive materials

Photoimaging compositions and processes

(contg. metal, ***barrier***, and inorg. layers for embossed
 article prodn.)

IT Electric field, ***chemical*** and physical effects

(on ***photoconductivity*** of materials contg. metal,
 barrier and inorg. layers)

IT Rosin

articles)
 IT ***Photoresist***
 Polarizers
 Memory devices
 Printing plates
 Diffraction gratings
 (***photosensitive*** materials contg. metal, ***barrier***
 , and inorg. layers for fabrication of)
 IT Holography
 (recording materials for, ***photosensitive*** materials
 contg. metal, ***barrier*** , and inorg. layers of)
 IT Electric circuits
 (micro , ***photosensitive*** materials contg. metal,
 barrier , and inorg. layers for fabrication of)
 IT 7440-38-2, uses and miscellaneous 7782-49-2, uses and
 miscellaneous 14362-44-8, uses and miscellaneous
 (chalcogenide glass compns. contg., ***photoimaging***
 material, for prodn. of embossed articles)
 IT 1203-33-0 1203-34-0 1203-35-2 ***7429-90-5*** , uses and
 miscellaneous 7439-96-5, uses and miscellaneous 7440-22-4, uses
 and miscellaneous 7440-47-3, uses and miscellaneous 7440-50-8,
 uses and miscellaneous 7440-57-5, uses and miscellaneous
 10097-28-5 11144-25-5 12225-34-2 12065-11-1
 78164-29-1
 (***photoimaging*** material, for prodn. of embossed
 articles)
 L12 ANSWER 10 OF 20 COPYRIGHT 1993 ACS
 AN CA93(20):189138K
 TI Cuprous oxide ***photovoltaic*** cells
 AU Trivich, Dan; Wang, Edward Y.
 CS Wayne State Univ.
 LO Detroit, MI 48202, USA
 SO Sol. Energy Res. Inst., [Tech. Rep.] SERI/TP, TP-49-105, Proc.:
 Photovoltaics Adv. Mater. Rev. Meet., 545-64
 SC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 DT T
 CO SEISDJ
 PY 1979
 LA Eng
 AB The possibility of chem. reactions. at the interfaces of metal/Cu₂O
 junctions was investigated, and the effect of interlayers between
 the metal and Cu₂O to restrain the chem. reaction. and to produce
 MIS structures was studied. The difficulty in obtaining higher
 open-circuit voltage, V, with low work function metals on Cu₂O for
 Schottky ***barriers*** was explained by high resolu. Auger and
 electron spectroscopy for chem. anal. studies. These show that an
 Al/Cu₂O junction reverts to a Cu/Cu₂O junction by the redn. of the
 Cu₂O to Cu by Al resulting in a lower V. There is some evidence that
 interlayers, e.g., Al₂O₃, can serve to restrain this reaction. but
 the ***deposition*** of AlO_x by evapn. of Al in 10⁻³ torr O did
 not yield the desired results.
 KW copper oxide solar cell; schottky copper oxide solar cell
 IT ***Photoelectric*** devices
 (solar, copper oxide, MIS and Schottky- ***barrier*** ,
 properties of)
 IT 1244-28-1, uses and miscellaneous ***7429-90-5*** , uses and
 miscellaneous 7440-50-8, uses and miscellaneous 7440-57-5, uses
 and miscellaneous ***11126-22-0*** 12033-89-5, uses and
 miscellaneous
 (***photoelec*** . solar cells contg. layer of, MIS copper
 oxide, properties of)
 IT 1217-39-1, uses and miscellaneous
 (***photoelec*** . solar cells, MIS and Schottky-
 barrier , properties of)

L12 ANSWER 11 OF 20 COPYRIGHT 1993 ACS
 AN CA93(12):124524p
 TI Tunneling MIS Structures
 AU Card, H. G.
 CC Columbia Radiat. Lab., Columbia Univ.
 LO New York, NY 10027, USA
 CO Conf. Ser. Inst. Phys., 50(Insul. Films Comiss.), 140-65
 SC 70-13 (Electric Phenomena)
 DT J
 CO IPWDAC
 IS 0273-0751
 PY 1982
 LA Eng
 AB For an MIS structure, quantum-mech. tunneling is ***formulated*** within the WKB (Wentzel-Kramer-Brillouin) approxn.; a Franz dispersion relation between the (imaginary) wavevector and the energy within the energy gap of the insulator is used and different effective masses in the conduction and valence bands of the insulator are assumed. Exptl. techniques are described which provide for the sepn. of majority- and minority-carrier tunnel currents and for the independent measurement on the same MOS sample of the tunneling ***barriers*** to electrons and holes from the semiconductor. The holes see a greater ***barrier*** in the metal-SiO₂-Si system, majority carriers dominate the tunnel current in Au-SiO₂-nSi devices and minority carriers dominate in Al-SiO₂-pSi devices. The Schottky ***barrier*** -to-MOS transition may be obsd. by variation of the oxide thickness, or, for a const. thickness, by variation of the level of illumination with visible ***light***. The application of tunneling MIS structures in ***photovoltaic*** energy conversion, in optoelectronics, and in neg.-resistance devices is explained.
 KW tunneling semiconductor MIS device
 IT Semiconductor devices
 (MIS structures, tunneling in)
 IT Tunneling
 Electric current carriers
 (in MIS structures)
 IT Potential ***barrier***
 (Schottky, in MIS structures)
 IT 7440-21-3, uses and miscellaneous ***7631-86-9***, uses and miscellaneous
 (MIS devices from, tunneling in)
 IT ***7429-90-5***, properties
 (aluminum-silica-silicon structures, tunneling in MIS)
 IT 7440-57-5, properties
 (gold-silica-silicon structures, tunneling in MIS)

L12 ANSWER 12 OF 20 COPYRIGHT 1993 ACS
 AN CA92(22):189201e
 TI Wideband optical disc data recorder systems
 AU Ammon, G. J.
 CS Adv. Technol. Lab., RCA
 LO Camden, NJ 08102, USA
 CO Proc. Soc. Photo-Opt. Instrum. Eng., 200(Laser Rec. Inf. Handl.), 64-72
 SC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)
 SX 75
 DT J
 CO SPIECS
 IS 0351-2748
 PY 1982
 LA Eng
 AB A wideband optical disk, digital recorder/playback system, the disk itself, test results, applications and future improvements are

described. Recording is accomplished with a modulated laser beam, positioned on the disk by a track mirror and a focus lens. Playback is done at a reduced const. ***light*** level. A servo maintains precision focus of the laser spot on the microscopically uneven disk surface. Fine tracking is obtained by a jitter track servo. A 4-layer antireflection disk structure provides high optical and thermal efficiency, very high sensitivity and signal to noise ratio, and has the potential for low fabrication cost. Record/playback data rates of 50 Mb/s and data densities of 10¹¹ bits per disk sq. cm. have been demonstrated. Optical disk configurations were developed for 3 applications: a 400 Mb/s recorder/reproducer (using eight 50 Mb/s channels), a 1012 bit jukebox reader, and a 1014 bit access memory system (with a 2- μ s access time to any data record). Future systems will use laser diodes for both record and playback, allowing more compact designs with greater reliability and lower cost.

KW wideband optical disk recorder; digital recording app optical disk
 IT Laser radiation, ***chemical*** and physical effects
 IT (in wideband optical disk recording app.)
 IT Recording apparatus
 IT (optical, wideband disk)
 IT ***7431-85-9*** , uses and miscellaneous
 IT (wideband optical recording disk with thermal ***barrier***
 layer contg.)
 IT 7442-32-5, uses and miscellaneous
 IT (wideband optical recording disks with recording layer contg.)
 IT ***7429-00-5*** , uses and miscellaneous
 IT (wideband optical recording disks with reflector layer contg.)

L12 ANSWER 13 OF 20 COPYRIGHT 1993 ACS

AN CA88(16):113372h

TI Relief products with predesigned configuration

AU Kostyshin, M. T.; Romanenko, P. F.

CS Institute of Semiconductors, Academy of Sciences, Ukrainian S.S.R.

LC USSR

SC Ser. Offen., 50 pp.

PI DE 2600207 14 Jul 1977

AI DE 76-2600207 5 Jan 1976

IC G03F007-10

SC 74-8 (Radiation Chemistry, Photochemistry, and Photographic Processes)

DT P

CO GWKXBX

PY 1977

LA Ger

AB A material for prepg. relief images by electromagnetic and actinic radiation consists of a support carrying a metal layer, a ***barrier*** layer, and a layer of an inorg. material. A variety of ways for both the ***formation*** and removal of the ***barrier*** layer is described. Thus, on a glass plate was vapor- ***deposited*** a 1200- \AA thick layer of Ag, a 60- \AA thick ***barrier*** layer of As₂Se₃, and a 600- \AA thick layer of As₂Se₃. An interference image with a spatial frequency of 1200 lines/mm [2 coherent ***light*** beams from a He-Ne laser (λ = 6328 \AA)] was then projected onto the material and the unexposed As₂Se₃ and As₂Se₃ areas were then removed by immersion in a 10% aq. soln. of KOH to give an amplitude phase hologram. Through a further process a relief image consisting of only Ag was obtained.

KW metal inorg compd ***photoimaging*** relief; holog metal inorg compd composite; selenide relief ***photoimaging*** ; selenium relief ***photoimaging***

IT ***Photoimaging*** compositions and processes
 IT (contg. metal layer, ***barrier*** layer, and layer of inorg. material for relief images)

IT Relin
 IT (***photoimaging*** materials contg. metal layer, inorg.

layer and ***barrier*** layer of, for relief images)
 IT Holography
 (recording materials for, metal ***barrier*** layer, inorg.
 layer, ***photosensitive*** composites and
 IT 7440-22-4, uses and miscellaneous 7440-50-3, uses and
 miscellaneous 7440-57-1, uses and miscellaneous 65000-23-1
 (***photoimaging*** materials contg. inorg. layer,
 barrier layer, and, for relief imaging)
 IT 7440-38-2, uses and miscellaneous 7553-56-2, uses and
 miscellaneous 7702-40-2, uses and miscellaneous
 (***photoimaging*** materials contg. metal layer,
 barrier layer, and glassy layer contg., for relief
 images)
 IT 12035-11-1
 (***photoimaging*** materials contg. metal layer,
 barrier layer, and layer contg., for relief images)
 IT 1303-36-2
 (***photoimaging*** materials contg. metal layer,
 barrier layer, and layer of, for relief images)
 IT 1303-33-3 1303-34-3 ***7429-90-5***, uses and miscellaneous
 7440-47-3, uses and miscellaneous ***10097-28-6*** 12025-34-2
 (***photoimaging*** materials contg. metal layer, inorg.
 layer, and ***barrier*** layer of, for relief images)

L12 ANSWER 14 OF 20 COPYRIGHT 1993 ACS

AN CA80(22):102008c

TI Aluminum p-silicon MOS [metal-oxide-semiconductor]

photovoltaic cell

AU Charlson, E. J.; Lien, J. C.

CS Electr. Eng. Dep., Univ. Missouri

LC Columbia, Mo., USA

SC J. Appl. Phys., 46(9), 3982-7

SC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

DT J

CO JAPIAU

PY 1975

LA Eng

AB An MOS ***photovoltaic*** diode, consisting of Al [7429-90-5] on
 p-type Si [7440-21-3] with a thin interfacial layer of SiO₂
 [7631-86-9], has good conversion efficiency for solar radiation.
 Measurements of capacitance vs. voltage, current vs. voltage, and
 photocurrent per absorbed ***photon*** indicate a most
 probable surface ***barrier*** height of 0.85 eV, approx. twice
 as large as that for the normal Al p-type silicon diode. A
 single-layer antireflection ***coating*** of SiO₂ [10097-28-6] or
 ZnS [1314-98-3] increased the short-circuit current by approx. 50%.
 Double-layer ***coatings*** of ZnS over SiO₂ gave nearly the same
 increase with a shift of the max. diode response to the near ir.
 Abs. ***light*** -conversion efficiencies of 8% at one sunlight
 level were obtained with short-circuit c.ds. $I_{sc} \approx 26.5 \text{ mA/cm}^2$.
 KW silica silicon ***photoelec*** cell; oxide silicon
 antireflection ***coating***; zinc sulfide antireflection
 coating

IT ***Photoelectric*** cells

(solar, silicon, metal-oxide-semiconductor aluminum)

IT 1314-98-3, uses and miscellaneous ***10097-28-6***

(***coatings***, antireflection, on aluminum in
 metal-oxide-semiconductor silicon ***photoelec*** cells)

IT ***7631-86-9***, uses and miscellaneous

(***coatings***, on aluminum silicon metal-oxide-
 semiconductor ***photoelec*** cells)

IT 7440-21-3, uses and miscellaneous

(***photoelec*** cells, metal oxide-semiconductor aluminum)

IT ***7429-90-5***, properties

(transmittance of, on silicon ***photoelec*** cells, effect
 of antireflection ***coatings*** on)

L12 ANSWER 15 OF 20 COPYRIGHT 1993 ACS
 AN CA00(20):170050z
 TI Characteristics of optical guided modes in multilayer metal-clad planar optical guide with low index dielectric ***buffer*** layer
 AU Yamamoto, Yoshinobu; Kamiya, Takeshi; Yanai, Hiroyoshi
 CC Fac. Eng., Univ. Tokyo
 LC Tokyo, Japan
 SO IEEE J. Quantum Electron., QE11(9), 720-22
 SS 72-6 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
 CX 76
 DT J
 CO IEJGA7
 PY 1975
 LA Eng
 AB The attenuation characteristics of a multilayer metal-clad optical guide, which is suitable for a mode filter or electrooptic devices, was investigated by exact theory and an anal. approx. based on a perturbation technique. By using this approx., the dependences of the ohmic loss on the various waveguide parameters and the condition for the absorption peak of the TM mode were derived in closed ***form***. Some remarks concerning the waveguide material and dimension for the design of the mode filter are also presented. The insertion loss at the abrupt junction between a normal (dielec.-clad) optical guide region and a metal-clad optical guide region is treated. Also the transformation of optical guided modes in the 2 kinds of tapered structures between the above 2 regions is examd.
 KW waveguide multilayer metal clad property; electrooptic device multilayer waveguide; dielec multilayer waveguide; attenuation property multilayer waveguide
 IT Waveguides
 (attenuation characteristics of multilayer metal clad, with low index dielec. ***buffer*** layer)
 IT Optical absorption
 (attenuation properties, of multilayer metal-clad optical waveguides with low index dielec. ***buffer*** layer)
 IT Electrooptical effect
 (devices, attenuation characteristics of multilayer metal-clad waveguides used in)
 IT ***Light***
 (mode filters, attenuation characteristics of waveguides for)
 IT Electric insulators and Dielectrics
 (multilayer metal-clad waveguides contg. ***buffer*** layer of, attenuation characteristics of)
 IT Glass
 (multilayer metal-clad waveguides contg., attenuation characteristics of)
 IT Metals, uses and miscellaneous
 (multilayer waveguides clad with, attenuation characteristics of)
 IT ***7440-90-5***, uses and miscellaneous 7440-02-0, uses and miscellaneous 7440-22-4, uses and miscellaneous 7440-57-5, uses and miscellaneous
 (claddings, on multilayer waveguides, attenuation characteristics based on)
 IT 1344-28-1, uses and miscellaneous ***7631-86-9***, uses and miscellaneous
 (multilayer metal-clad waveguides contg., attenuation characteristics of)

L12 ANSWER 16 OF 20 COPYRIGHT 1993 ACS
 AN CA77(26):172275z
 TI Complanometry and ***photometry*** in anal. of schungite rocks

AU Alikova, E. A.; Koryukova, I. M.
 LO USSR
 CO Tr. Leningrad. Nauch.-Issled. Proekt. Inst. Gsn. Khim. Prom., No. 1,
 258-60
 From: Ref. Zh., Khim. 1972, Abstr. No. 55132
 CO 70-6 (Inorganic Analytical Chemistry)
 DT J
 PY 1971
 LA Russ
 AB From Ref. Zh., Khim. 1972, Abstr. No. 55132. Extrn.-
 photometric techniques for detn. of trace elements (Ni, Cu,
 Mn, V) in schungite rocks was studied. The rock was decompd. by
 fusion with Na2CO3 and K2CO3 in the presence of KNO3. Complexometric
 and ***photosolorimetric*** techniques were used for detn. of
 basic components of the mineral part of the schungite rock (SiO2,
 Fe, Al, Ca, Mg). To det. Ni, an extrn.- ***photometric*** method
 was used with dimethylglyoxime (I). ***To*** a 10-15-ml aliquot
 was added 5 ml 20% Seignette salt soln.; the soln. was neutralized
 with NH4OH (1:1) and 2-3 drops excess were added. Alc. I (2-3 ml 1%)
 and 5 ml CHCl3 were added, and the soln. was extd. for 1.5-2 min.
 The extrn. was repeated 2-3 times. Ni was reextd. twice with 5 ml
 0.5N HCl. Seignette salt (5 ml 20% soln.) was added to the ext., the
 soln. was neutralized with 5% NaOH and a 10-ml excess was added.
 Then 10 ml 5% (NH4)2S2O8 and 10 ml 1% I in 5% NaOH were added. The
 soln. was stirred and the absorbance was measured at 450 nm. Pb
 diethyldithiocarbamate (II) was used to det. Cu. An aliquot of the
 sample soln. was evapd. to 10-15 ml and extd. with 10 ml CHCl3.
 Seignette salt (5 ml 10%) was added to the aq. layer, the soln. was
 neutralized with NH4OH, and 5 ml pH 5.5 ***buffer*** was added.
 Next, 10 ml CHCl3 soln. of II was added, the soln. was extd. 3 min,
 and the absorbance of the org. phase was measured. Mo was detd. by
 using the thiocyanate method. Citric acid (3 ml 50% soln.), 25 ml 2N
 H2SO4, 4 ml 2% ferric ammonium alum, 5 ml 2% CuSO4, 20 ml 5%
 thiourea, and 2 ml 50% NH4SCN soln. were added to a sample aliquot.
 The absorbance was measured in 10 min. Detn. of V is based on the
 formation of a P-V-W heteropoly acid. The techniques can be used for
 anal. of slags and ferrophosphorus.
 KW schungite rock analysis; nickel detn schungite rock; copper detn
 schungite rock; molybdenum detn schungite rock; vanadium detn
 schungite rock
 IT 12424-49-6
 (anal. of)
 IT ***7429-90-5***, analysis 7439-89-6, analysis 7439-95-4,
 analysis 7439-98-7, analysis 7440-02-0, analysis 7440-50-8,
 analysis 7440-62-2, analysis 7440-70-2, analysis
 7631-86-3, analysis
 (detn. of, in schungite rocks)
 L12 ANSWER 17 OF 20 COPYRIGHT 1993 ACS
 AN CA77(22):14C127h
 TI Deterioration of reflecting ***coatings*** by intermetallic
 diffusion
 AU Hunter, W. R.; Mikes, T. L.; Hass, G.
 CS E. O. Hulburt Cent. Space Res., U. S. Nav. Res. Lab.
 LO Washington, D. C., USA
 SO Appl. Opt., 11(7), 1594-7
 SC 73-8 (Spectra by Absorption, Emission, Reflection, or Magnetic
 Resonance, and Other Optical Properties)
 DT J
 CO APOPAI
 PY 1972
 LA Eng
 AB Au diffraction gratings overcoated with Al + MgF2 to increase their
 efficiency in the vacuum ***uv*** suffered a severe loss in
 efficiency within 6 months to a year after ***coating***; for
 example, from 50% to 2% at lambda. 1216 .ANC.. The cause of this

more complete study of Au-Al film combinations was performed. The ***coatings*** were aged at room and elevated temps. Reflectance measurements were made in the visible and vacuum ***uv*** spectral regions. For wavelengths longer than lambda. 500 nm., the measurements show very little change until the diffusion boundary reaches the penetration depth of the radiation. If Al is the first surface layer, however, reflectance measurements at lambda. 504 nm. permit measuring the progress of the diffusion boundary toward the Al surface because of the low absorptance of Al at this wavelength. Interdiffusion can be effectively eliminated by the use of thin dielec. layers such as SiO and the natural oxide of Al. Such protected ***coatings*** have been exposed for one week at a temp. of 170.degree. with no visible sign of diffusion, whereas a similar ***coating*** without the ***barrier*** layer would become useless in less than 1 hr. Some preliminary studies have been made with Pt-Al film combinations.

KW gold diffraction grating efficiency; aluminum. ***coating***
 diffraction grating
 IT Optical reflection
 (by diffraction grating ***coatings***, intermetallic diffusion in relation to)
 IT Diffraction gratings
 (***coating*** materials for, intermetallic diffusion in relation to deterioration of)
 IT ***Coating*** materials
 (for diffraction gratings, intermetallic diffusion deterioration of reflecting)
 IT Diffusion
 (intermetallic, diffraction grating reflective ***coating*** deterioration in relation to)
 IT 7440-57-5, uses and miscellaneous
 (diffraction gratings of, intermetallic diffusion deterioration of reflective ***coatings*** for)
 IT 1344-28-1, uses and miscellaneous ***12007-28-6***
 (optical ***coatings***, reflective, for diffraction gratings)
 IT ***7429-90-5***, uses and miscellaneous
 (reflecting ***coatings*** of, for gold diffraction gratings, intermetallic diffusion deterioration in)
 IT 7783-40-6
 (reflecting ***coatings*** of, for gold diffraction gratings, intermetallic diffusion in relation to deterioration of)
 IT 7440-26-4, uses and miscellaneous
 (reflective ***coatings*** of, for gold diffraction gratings)

L12 ANSWER 18 OF 20 COPYRIGHT 1993 ACS

AN CA76(12):65202k

TI Study of ionizing radiation damage in MOS [metal-oxide-semiconductor] structures using internal ***photoemission***

AU Peel, J. L.; Eden, R. C.

CS Electron. Group, North Am. Rockwell

LC Anaheim, Calif., USA

EO IEEE Trans. Nucl. Sci., 18(6), 84-90

SC 71 (Electric Phenomena)

DT J

CO IETNAE

PY 1971

LA Eng

AB ***Barrier*** heights at Si-SiO2 and SiO2-metal (Cr or Al) interfaces were reduced by large oxide space charges located, under neg. bias, near the metal-oxide interface. ***Photoexcited*** charge originates in discrete energy levels, assocd. with diffused impurities in the oxide, and is related to radiation hardness.

KW radiation damage semiconductor structure; metal-oxide semiconductor structure. ***photoemission*** internal semiconductor structure

IT ***Photoelectric*** emission
(from metal and semiconductor structures, internal, in study of radiation damage)

IT Transistors
(metal-oxide-semiconductor, radiation damage in, study with internal ***photoelec*** emission)

IT Radiation, ***chemical*** and physical effects
(on metal oxide-semiconductor structures, internal ***photoelec*** emission in study of)

IT Oxides, properties
(radiation damage in structures from metals and semiconductors and, internal ***photoelec*** emission in study of)

IT Metals, properties
(radiation damage in structures from oxides and semiconductors and, internal ***photoelec*** emission in study of)

IT Semiconductor devices
(with metals and oxides, radiation damage in, internal ***photoelec*** emission in study of)

IT 7442-21-3, properties
(radiation damage in structures from metals and silica and, internal ***photoelec*** emission in study of)

IT ***7631-86-9***, properties
(radiation damage in structures from metals and silicon and, internal ***photoelec*** emission in study of)

IT ***7429-02-5***, properties 7442-47-3, properties
(radiation damage in structures from silica and silicon and, internal ***photoelec*** emission in study of)

L12 ANSWER 19 OF 20 COPYRIGHT 1993 ACS
AN CA75(24):146114k
TI Deterioration of vacuum ***ultraviolet*** reflecting surfaces by the ***formation*** of intermetallic compounds
AU Hunter, W. R.; Mikes, T. L.; Anstead, R. J.; Osantowski, J. F.
CS E. O. Hulburt Cent. Space Res., U. S. Nav. Res. Lab.
LO Washington, D. C., USA
EO Appl. Opt., 10(9), 2109-201
EE 72 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)
DT J
CO APOPAI
PY 1971
LA Eng
AD Vacuum ***uv*** Au replica gratings overcoated with Al + MgF2 exhibited marked deterioration in 6 months-1 year after overcoating (efficiency at 1215 .ANG. dropped from 50 to 2%). Similar deterioration was obsd. when Au + Al or Pt + Al ***coatings*** were employed. The deterioration results from diffusion of dissimilar metals into one another. A ***barrier*** layer of SiO or AlO between the grating and the overcoating inhibited deterioration.

KW vacuum ***UV*** gold grating; ***coating*** gold replica grating

IT Optical reflection
(by replica gratings, ***coatings*** for protection thereof)

IT Diffraction gratings
(vacuum ***uv*** reflecting, surface deterioration of, elimination of)

IT ***7429-02-5***, uses and miscellaneous 7440-25-4, uses and miscellaneous 7783-40-6
(***coatings***, reflective, surface deterioration inhibition of)

IT ***10207-28-6*** 14457 64-8
(diffraction grating protection by overcoating with)

IT 7440-57-5, uses and miscellaneous
(diffraction replica gratings, deterioration inhibition of)

ANSWER TO Q120 COPYRIGHT 1988 RSC
 AN 0A74(24)1028021
 TI Eliminating excess etching of semiconductor substrates
 AU Gauthier, Roger A.; Lofgren, John J., Jr.
 SS International Business Machines Corp.
 SS Fr. Demands, 11 pp.
 PI FR 2028002 10 NOV 1978
 PRAI US 15 Jan 1989
 IC 0020; H01L
 CC 71 (Electric Phenomena)
 DT F
 CO FRNDEL
 PY 1978
 LA Fr

AB Lines of Al or Mo are ***deposited*** on a Si substrate, and a layer of SiO₂ is ***formed*** over them. An adhesive and a layer of ***photorestant*** material are placed on top, and, after selective exposure, the SiO₂ is etched selectively away until the metal is exposed, then the etching is stopped. The etchant is ***buffered*** and contains an indicating polyhydric alc. Thus, when a layer of SiO₂ above Al and Si is etched with a mixt. of aq. NH₄F, HF and glycerol, the yellowish surface turns bright white as soon as the Al is exposed, and etching is then stopped. The etchant contains aq. satd. NH₄F and aq. HF in the vol. proportions between 7:1 and 4:1, contains 10-30 vol. % glycerol, and is used at 30-70.degree..
 KW silicon excess etching elimination; semiconductor excess etching elimination
 IT Semiconductors, electric
 (etching of silica on, indicator for completion of)
 IT Etching
 (of silica on semiconductors, indicator for completion of)
 IT ***7631-86-9*** , reactions
 (etching of, on semiconductors, indicator for completion of)
 IT 56-81-5, uses and miscellaneous 57-55-5, uses and miscellaneous
 107-21-1, uses and miscellaneous ***7429-00-5*** , uses and
 miscellaneous 7439-08-7, uses and miscellaneous
 (etching-completion indicator, for silica on semiconductors)

> d hic

(FILE 'HOME' ENTERED AT 02:06:37 ON 07 SEP 93)

FILE 'REGISTRY' ENTERED AT 02:06:16 ON 07 SEP 92

L1 1 S ALUMINUM/CN
 L2 4 S SILICON OXIDE/CN OR SILICON DIOXIDE/CN OR SILICON MONOX

FILE 'CA' ENTERED AT 02:06:49 ON 07 SEP 93

L3 6552 S L1 AND L2
 L4 0 S (CVD OR DEPOSIT? OR COAT? OR FORM?)/BI,AB(13W)L2
 L5 3677 S L3 AND (1965-1985)/PY
 L6 2400 S L5 AND (CVD OR DEPOSIT? OR COAT? OR FORM? OR CHEMICAL?)
 L7 661 S L6 AND (PLASMA? OR PHOTO? OR LIGHT? OR UV OR ULTRAVIOLE
 L8 275 S L7 AND (WIR? OR LEAD? OR CONTACT? OR ELECTROD?)/BI,AB
 L9 34 S L7 AND (BARRIER? OR BUFFER?)/BI,AB
 L10 13 S L8 AND L9

FILE 'REGISTRY' ENTERED AT 02:20:18 ON 07 SEP 93

L11 1 S HYDROFLUORIC ACID/CN

FILE 'CA' ENTERED AT 02:20:33 ON 07 SEP 92

L12 20 S L2 NOT (L11 OR L10)

=> file reg

COST IN U.S. DOLLARS

FILE
 ENTRY

TOTAL
 SESSION

FULL ESTIMATED COST

36.90

124.64

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

CA SUBSCRIBER PRICE

7.00

12.54

FILE 'REGISTRY' ENTERED AT 02:26:42 ON 07 SEP 93
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STRUCTURE FILE UPDATED: 5 SEP 93 HIGHEST RN 140017-05 2

DICTIONARY FILE UPDATED: 6 SEP 93 HIGHEST RN 140017 05 2

=> 3 teos/cn

L13 1 TEOS/CN

=> 1 oxygen/cn

L14 1 OXYGEN/CN

=> file ca

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

6.11

130.75

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

CA SUBSCRIBER PRICE

0.00

12.54

FILE 'CA' ENTERED AT 02:27:07 ON 07 SEP 93
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FILE COVERS 1967 - 4 Sept 93 (930904/ED) VOL 119 ISS 10.

=> d his

(FILE 'HOME' ENTERED AT 02:06:07 ON 07 SEP 93)

FILE 'REGISTRY' ENTERED AT 02:06:16 ON 07 SEP 93

L1 1 S ALUMINUM/CN

L2 4 S SILICON OXIDE/CN OR SILICON DIOXIDE/CN OR SILICON MONOX

FILE 'CA' ENTERED AT 02:06:40 ON 07 SEP 93

L3 6552 S L1 AND L2

L4 0 S (CVD OR DEPOSIT? OR COAT? OR FORM?)/BI,AB(10W)L2

L5 3677 S L3 AND (1965-1985)/PY

L6 2400 S L5 AND (CVD OR DEPOSIT? OR COAT? OR FORM? OR CHEMICAL?)

L7 661 S L6 AND (PLASMA? OR PHOTO? OR LIGHT? OR UV OR ULTRAVIOLET)

L8 275 S L7 AND (WIR? OR LEAD? OR CONTACT? OR ELECTROD?)/BI,AB

L9 34 S L7 AND (BARRIER? OR BUFFER?)/BI,AB

L10 13 S L8 AND L9

FILE 'REGISTRY' ENTERED AT 02:20:18 ON 07 SEP 93

L11 1 S HYDROFLUORIC ACID/CN

FILE 'CA' ENTERED AT 02:20:33 ON 07 SEP 93

L12 20 S L9 NOT (L11 OR L10)

FILE 'REGISTRY' ENTERED AT 02:26:42 ON 07 SEP 93

L13 1 S TEOS/CN

L14 1 S OXYGEN/CN

FILE 'CA' ENTERED AT 02:27:07 ON 07 SEP 93

=> 18 and 113

3001 L13

L15 2 10 AND L10

17 and L12

0001 L10

L10 1 L7 AND L10

11

L10 ANSWER 1 OF 1 COPYRIGHT 1982 ACC

AN CAC7(10)128785f

TI Laminated film

AU Hayashi, Kenji; Kubayashi, Shoji; Ohshima, Keisuke

CS Teray Industries, Inc.

LO Japan

CO Eur. Pat. Appl., 25 pp.

PI EP 40080 A1 7 Apr 1982

DS R: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE

AI EP 01-004330 22 Sep 1981

PRAI JP 80-102048 25 Sep 1980

IC 002B001-10; 002D015-00

CC 08-3 (Plastics Fabrication and Uses)

DT F

CC EPIEDW

PY 1982

LA Eng

AD A laminated film having high visible ***light*** ray transmittance and high IR ray reflectance is obtained from a composite comprising a polymer film, a thin metal layer (00-500 .ANG.), and a transparent thi

d all 1-13

L10 ANSWER 1 OF 13 COPYRIGHT 1993 ACS
AN CA102(24):213794y
TI MOS transistors
CS Matsushita Electronics Corp.
LO Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
PI JP 59222945 A2 14 Dec 1984 Showa
AI JP 83-98386 2 Jun 1983
IC ICM H01L021-88
ICS H01L021-94
SC 76-3 (Electric Phenomena)
DT P
CO JKXXAF
PY 1984
LA Japan
AB MOS transistors for integrated circuits are prep'd. by locally oxidizing Si, ***forming*** a gate SiO2 layer, patterning a poly-Si gate, dopant diffusing, ***coating*** with Si3N4 and borophosphosilicate glass, annealing, ***plasma*** etching the exposed Si3N4 in CF4, etching the now exposed SiO2 in HF-NH4F-H2O soln., and ***forming*** Al ***contacts***.
KW MOS transistor silicon silica; borophosphosilicate glass MOS transistor
IT Transistors
(MOS, silicon, fabrication of)
IT Etching
(of silica- ***buffered*** hydrofluoric soln. for transistor fabrication)
IT Sputtering
(etching, of silicon nitride with carbon tetrafluoride and transistor fabrication)
IT Etching
(sputter, of silicon nitride with carbon tetrafluoride and transistor fabrication)
IT ***7631-86-9*** , uses and miscellaneous
(MOS transistor fabrication with)
IT ***7429-90-5*** , uses and miscellaneous
(elec. ***contacts*** , for transistor fabrication)
IT 12125-01-8
(etchant from hydrofluoric acid and, for silica for transistor fabrication)
IT 7664-39-3, uses miscellaneous
(etchant, for silica in transistor fabrication)

IT 12033-89-3, uses and miscellaneous
(masks, in MOS transistor fabrication)
IT 75-72-2
(***plasma*** etchant from, for silicon nitride in transistor fabrication)

L10 ANSWER 2 OF 13 COPYRIGHT 1993 ACS

AN CA102(24):213723z

TI Integrated-circuit multilayer ***wirings***

CS Toshiba Corp.

LQ Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

PI JP 59213144 A2 3 Dec 1984 Showa

AI JP 83-87032 18 May 1983

IC ICM H01L021-88

ICS H01L021-28; H01L021-306

SC 76-2 (Electric Phenomena)

DT P

CC JKXMAF

PY 1984

LA Japan

AB The d. is increased of integrated circuit multilayer ***wirings***
by patterning poly-Si on an insulator (SiO2, Si3N4, or
phosphosilicate glass on Si, ***plasma*** ***depositing***
SiO2, resist masking, etching in ***buffered*** HF,
depositing W by H2 redn. of WF6, and ***depositing***
the 2nd ***wiring*** layer.

KW multilayer ***wiring*** integrated circuit

IT Sputtering

(in insulator film ***deposition*** for multilayer
wiring of integrated circuits)

IT Electric circuits

(integrated, multilayer ***wiring*** patterns for)

IT 7440-33-7, uses and miscellaneous

(elec. conductors from, for multilayer ***wirings*** of
integrated circuits)

IT ***7429-90-5***, uses and miscellaneous

(elec. ***contacts***, for multilayer ***wirings*** of
integrated circuits)

IT ***7631-86-9***, uses and miscellaneous 12033-89-5, uses and
miscellaneous

(elec. insulators, for multilayer ***wirings*** for
integrated circuits)

IT 7664-39-3, uses and miscellaneous

(etchant, for silicon from multilayer ***wirings*** of
integrated circuits)

IT 10024-97-2, uses and miscellaneous

(in silica film ***deposition*** from silane for multilayer
wirings)

IT 7440-21-3, uses and miscellaneous

(multilayer ***wirings*** for integrated circuits from
polycryst. films of)

IT 7803-62-5, reactions

(reaction of, with dinitrogen oxide in ***deposition*** of
silica from multilayer ***wiring***)

IT 7783-82-6

(redn. of, by hydrogen for tungsten ***deposition*** for
multilayer ***wiring***)

IT 1333-74-0, uses and miscellaneous

(reducing agent, for tungsten hexafluoride for multilayer
wiring for integrated circuits)

L10 ANSWER 3 OF 13 COPYRIGHT 1993 ACS

AN CA102(20):177663u

TI Small dimension field effect transistor using phosphorus doped
silicon glass reflow

AU Kub, Francis J.; Evey, William M.
 CS Westinghouse Electric Corp.
 LO USA
 SO U.S., 13 pp.
 PI US 4499653 A 19 Feb 1985
 AI US 83-548547 3 Nov 1983
 IC ICM H01L021-94
 NCL 029571000
 SC 76-3 (Electric Phenomena)
 DT P
 CO USIDAM
 PY 1985
 LA Eng
 AB

A process sequence is described that reflows P-doped Si oxide prior to the ***formation*** of the drain and source of field-effect transistors, thereby permitting shallow drain and source regions. The P-doped Si oxide is defined or removed several microns outside of the device window so that ***contact*** windows through the P-doped Si oxide which may be relatively thick are not required. The original thermal oxide layer may be used as a ***contact*** window or a layer of Si₃N₄ ***deposited*** over the original thermal oxide and over a poly-Si gate may act as the ***contact*** window. Where the ***contact*** metal is Al and the gate ***electrode*** of a field effect transistor is polycryst. Si, W may be ***deposited*** over the drain and source and polycryst. Si gate prior to the ***deposition*** of Al, whereby the W will act as a ***barrier*** during ***plasma*** etch of the Al. Alternatively, where Al is used as a ***contact*** metal and the gate is polycryst. Si, an etchant may be selected which will etch Al without etching the Si. An integrated circuit may be ***formed*** having 2 levels of interconnection. The 1st may be made with polycryst. Si and the 2nd level with a metal such as Al. Short-channel field-effect transistors may be fabricated having shallow drain and source regions which are ***formed*** after an insulation layer of P-doped Si oxide is ***deposited***, defined or etched and reflowed.

KW transistor short channel glass reflow; phosphorus doped silicon glass transistor

IT Etching

(in transistor manuf. by phosphorus-doped silicon glass reflow process)

IT Transistors

(field-effect, with small dimensions, manufd. by using phosphorus-doped silicon glass reflow process)

IT Electric conductors

(interconnections, for transistors of small dimension manufd. by using phosphorus-doped silicon glass reflow process)

IT ***7429-90-5***, uses and miscellaneous

(elec. ***contacts*** from, in transistors manufd. by using phosphorus-doped silicon glass reflow process)

IT 7440-33-7, uses and miscellaneous

(etching of resists of, in transistor manuf. by using phosphorus-doped silicon glass reflow process)

IT 12033-89-5, uses and miscellaneous

(in transistor manuf. by using phosphorus-doped silicon glass reflow process)

IT 7440-21-3, uses and miscellaneous

(polycryst. gate ***electrodes*** from, in transistors using phosphorus-doped silicon glass reflow process)

IT ***7631-86-9***, uses and miscellaneous

(transistor manuf. by using phosphorus-doped, in reflow process)

IT 7723-14-0, uses and miscellaneous

(transistors manufd. by using reflow of silicon glass doped with)

SAIJIJI CISENICE RE.
CS NEC Corp.
LQ Japan
SQ Jpn. Kokai Tokkyo Koho, 4 pp.
PI JP 59193071 A2 1 Nov 1984 Showa
AI JP 83-66430 15 Apr 1983
IC H01L029-80; H01L021-28
SC 76-3 (Electric Phenomena)
DT P
CO JKXXAF
PY 1984
LA Japan
AB A GaAs FET with a small parasitic series resistance is prepd. by
implanting Si into semiinsulating GaAs, ***coating*** with SiO2,
patterning with Al, implanting Si, annealing in H2, masking,
reactive-ion etching, etching off the Al in H3PO4, etching in
buffered HF, ***coating*** with Al, lifting off the
resist, and ***forming*** source and drain ***contacts*** .
KW gallium arsenide FET
IT Etching
(of aluminum in gallium arsenide FET fabrication)
IT Transistors
(field-effect, gallium arsenide, fabrication of)
IT Etching
(ion-beam, reactive, of gallium arsenide in FET fabrication)
IT Lithography
(***photo*** -, in gallium arsenide FET fabrication)
IT 1303-00-0, uses and miscellaneous
(FET from, fabrication of)
IT ***7429-90-5*** , uses and miscellaneous
(Schottky ***contacts*** , for gallium arsenide FET)
IT 1333-74-0, uses and miscellaneous
(annealing atm. contg., for fabrication of gallium arsenide FET)
IT 7664-38-2, uses and miscellaneous
(etchant, for aluminum in gallium arsenide FET fabrication)
IT 14067-07-3, uses and miscellaneous
(implantation doping of gallium arsenide by, in FET fabrication)
IT ***7631-86-9*** , uses and miscellaneous
(in FET fabrication from gallium arsenide)
IT 75-73-0
(reactive-ion etchant, for gallium arsenide FET fabrication)

L10 ANSWER 5 OF 13 COPYRIGHT 1993 ACS
AN CA101(26):238930g
TI Field-effect transistors
CS Fujitsu Ltd.
LQ Japan
SQ Jpn. Kokai Tokkyo Koho, 4 pp.
PI JP 59119765 A2 11 Jul 1984 Showa
AI JP 82-226602 27 Dec 1982
IC H01L029-80; H01L021-28
SC 76-3 (Electric Phenomena)
DT P
CO JKXXAF
PY 1984
LA Japan
AB High-frequency Schottky GaAs FETs with high performances are prepd.
by ***coating*** semiinsulating GaAs with undoped GaAs
buffer and doped GaAs active layers, ***forming***
Au-12% Ge source and drain ***contacts*** , ***coating***
with SiO2, masking, anisotropically etching, removing the resist,
masking, etching with an HF-H2O2 aq. soln., ***coating*** with
Al, and lifting off the mask.
KW Schottky gallium arsenide FET
IT Etching
(of silica in gallium arsenide Schottky FET fabrication)

IT Transistors
 (field-effect, Schottky, gallium arsenide, fabrication of)
 IT Epitaxy
 (liq.-phase, of gallium arsenide in Schottky FET fabrication)
 IT Lithography
 (***photo*** -, in gallium arsenide Schottky FET fabrication)
 IT 1323-32-0, uses and miscellaneous
 (Schottky FET from, fabrication of)
 IT ***7429-90-5*** , uses and miscellaneous 12785-28-3
 (elec. ***contacts*** , for gallium arsenide FET)
 IT 7664-39-3, uses and miscellaneous
 (etchant from hydrogen peroxide and, for silica in gallium
 arsenide FET fabrication)
 IT 75-46-7
 (etchant, for silica in gallium arsenide FET fabrication)
 IT ***7631-86-9*** , uses and miscellaneous
 (in gallium arsenide FET fabrication)

L10 ANSWER 6 OF 13 COPYRIGHT 1993 ACS

AN CA100(6):44079v

TI Silica insulator for ***wiring*** layers

CS Fujitsu Ltd.

LO Japan

SO Jpn. Kokai Tokkyo Koho, 2 pp.

PI JP 58168240 A2 4 Oct 1983 Showa

AI JP 82-50096 30 Mar 1982

IC H01L021-316; H01L021-88

SC 76-10 (Electric Phenomena)

DT P

CO JKXXAF

PY 1983

LA Japan

AB SiO2 insulators which are crack-free and prevent the passage of H2O
 between the ***wiring*** layers are ***formed*** on Al
 wirings by the reaction of SiH4 with O2 at low pressure
 followed by chem. etching to smooth out the SiO2 layer.

KW silica insulator ***wiring*** semiconductor device; silane oxidn
 insulator ***wiring*** ; moisture ***barrier*** silica
 wiring layer

IT Semiconductor devices

(elec. insulators of silica for ***wiring*** layers of)

IT Etching

(in smoothing of silica insulators for ***wiring*** layers of
 semiconductor devices)

IT Glass, oxide

(phosphosilicate, for ***wiring*** layer ***coating***)

IT Electric insulators and Dielectrics

(silica, for ***wiring*** layers on semiconductor devices)

IT ***7631-86-9*** , uses and miscellaneous

(elec. insulators from, for ***wiring*** layers on
 semiconductor devices)

IT ***7429-90-5*** , uses and miscellaneous

(elec. ***wiring*** layers from, silica-insulator moisture
 barriers for)

IT 7803-62-5, reactions

(oxidn. of, silica-insulator moisture- ***barrier*** layers
 from)

IT 75-73-0

(***plasma*** etching of silica by, in prepn. of insulator
 layers for ***wiring*** of semiconductor devices)

IT 7782-44-7, reactions

(reactions of, with silane in silica insulator layer
 formation)

L10 ANSWER 7 OF 13 COPYRIGHT 1993 ACS

AN CA96(24):202478e

11
AU Sil'man, B. I.; Zaks, M. B.; Kasatkina, V. V.; Shokov, Ya. V.;
Tret'yakov, A. P.
LO Krasnodar, USSR
SO Geliotekhnika, (5), 3-9
SC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
DT J
CO SLOSTAY
IS 0016-5022
PY 1981
LA Russ

AB The properties of Schottky- ***barrier*** (Mg, Al)
inversion-layer metal-insulator-semiconductor (MIS) solar cells were
studied exptl. and theor. The effects of SiO₂ layer thickness, grid
spacing, and 1-MeV proton irradiation on the performance of the cells
are discussed. The promising outlook for the manuf. of Schottky-
barrier inversion-layer MIS Si solar cells is related to the
use of polycryst., film, and amorphous materials; the development of
low-temp. ***deposition*** methods for the dielec. layers; the
formation of the inversion layer on the semiconductor
surface with simultaneous provision of the required illuminative
properties; and the optimization of the metal-tunnel
dielec.-semiconductor ***contacts***.
KW silicon inversion layer MIS cell; solar cell silicon MIS
IT ***Photoelectric*** devices, solar
(silicon, inversion-layer MIS, properties of)
IT 12586-59-3, ***chemical*** and physical effects
(on silicon ***photoelec***. solar cells, inversion-layer
MIS)
IT ***7429-90-5***, uses and miscellaneous 7439-95-4, uses and
miscellaneous
(***photoelec***. solar cells contg. ***barrier*** of,
properties of inversion-layer MIS silicon)
IT ***7631-86-9***, uses and miscellaneous
(***photoelec***. solar cells contg. layer of, properties of
inversion-layer MIS silicon)
IT 7440-21-3, uses and miscellaneous
(***photoelec***. solar cells, inversion-layer MIS,
properties of)

L10 ANSWER 8 OF 13 COPYRIGHT 1993 ACS

AN CA96(10):78246m

TI Fabrication and properties of chromium-copper ***contact***
layer structures for integrated switching networks

AU Jahn, Axel; Gawalek, Wolfgang; Glauche, Erich; Stieff, Hartmut;
Anklam, Hans Juergen

CS Zentralinst. Festkoerperphys. Werkstofforsch., DAW

LO Ger. Dem. Rep.

SO Int. Wiss. Kolloq. - Tech. Hochsch. Ilmenau, 26(6), 49-52

SC 76-2 (Electric Phenomena)

DT J

CO IWKLAL

IS 0374-3365

PY 1981

LA Ger

AB The properties of Cr-Cu ***contact*** layers on SiO₂-passivated
Al-Si structures for integrated circuits was studied. The dependence
of the ***contact*** mech. strength on substrate temp. during
plasma ***deposition*** was detd. The differences are
attributed to crystn. The ***contacts*** can be structured by
etching in K₂Cr₂O₇-H₂SO₄ solns. for Cu and 6M HCl for the Cr. The
adhesion is (3-6) .times. 10⁷ N/m² and is unaffected by annealing.
The ***contact*** resistance is approx. 10⁻⁴ .OMEGA.-cm². Al₂O₃
diffusion ***barriers*** increase the ***contact***
stability. Corrosion by S was obsd.

KW copper chromium ***contact*** integrated circuit; etching copper

chromium ***contact*** ; adhesion copper chromium ***contact***
 ; resistance copper chromium ***contact*** ; alumina diffusion
 barrier ***contact***

IT Electric ***contacts***
 (chromium-copper, for integrated circuits, properties of)

IT Etching
 (of chromium-copper ***contact*** structures, for integrated
 circuits)

IT Electric resistance
 (***contact*** , of chromium-copper structure for integrated
 circuits)

IT Electric circuits
 (integrated, chromium-copper ***contacts*** for)

IT 1344-28-1, uses and miscellaneous
 (diffusion ***barrier*** , for chromium-copper
 contacts in integrated circuits)

IT 7440-47-3, uses and miscellaneous
 (elec. ***contact*** from copper and, for integrated
 circuits, properties of)

IT 7440-50-8, uses and miscellaneous
 (elec. ***contacts*** from chromium and, for integrated
 circuits, properties of)

IT ***7429-90-5*** , uses and miscellaneous
 (elec. ***contacts*** from copper and chromium for, in
 integrated circuits)

IT 7647-01-0, reactions
 (etching of chromium in copper multilayer ***contact***
 structures by soln. of)

IT 7664-93-9, reactions
 (etching of copper in chromium layer structures by soln. of,
 contg. potassium dichromate)

IT 7778-50-9
 (etching of copper in ***contact*** layer structures by
 sulfuric acid soln. contg.)

IT 7440-21-3, uses and miscellaneous
 (integrated circuits from, chromium-copper ***contacts***
 for)

IT ***7631-86-9*** , uses and miscellaneous
 (passivation layer, for aluminum in integrated circuits,
 copper-chromium ***contact*** layers on)

L10 ANSWER 9 OF 13 COPYRIGHT 1993 ACS

AN CA95(12):107384e

TI Weldable or solderable ***contact*** bump structures

AU Jahn, Axel; Pfeiffer, Gabriele; Risenberg, Rainer; Stieff, Hartmut

LO Ger. Dem. Rep.

SO Ger. (East), 9 pp.

PI DD 145979 14 Jan 1981

AI DD 79-210864 7 Feb 1979

IC H01L021-285; H01L023-50

SC 76-13 (Electric Phenomena)

DT P

CO GEXXA8

PY 1981

LA Ger

AB A simple, economical, and reproducible method for fabricating the
 title ***contact*** bumps on semiconductor integrated circuits
 consists of: (1) sputtering an adhesive and diffusion-
 barrier layer of Cr, (2) ***depositing*** a Cu layer on
 the Cr to a thickness .gtoreq.35 times that of the Cr layer and (3)
 photolithog . etching the layer structure into a bump
 contact . Thus, a Si-SiO₂ device with Al ***contact***
 windows in the SiO₂ was ***coated*** in the windows by a
 sputtered film of Cr 0.4-.mu. thick and then with a Cu film 15-.mu.
 thick. ***Photolithog*** . masking and etch with a FeCl₃-HCl
 aq. soln. gave a bump ***contact*** with resistance <10⁻⁵

KW bump ***contact*** integrated circuit; aluminum chromium copper.
 bump ***contact*** ; sputtering bump ***contact*** ; silicon
 device bump ***contact***
 IT Lithography
 (in bump ***contact*** fabrication)
 IT Sputtering
 (of bump ***contact*** for integrated circuits)
 IT Welding
 Soldering
 (of ***contacts*** on integrated circuits, method for
 improvement of)
 IT Electric ***contacts***
 (bump, sputter ***deposition*** of, for integrated circuits)
 IT Electric circuits
 (integrated, bump ***contact*** fabrication for)
 IT 7440-47-3, uses and miscellaneous 7440-50-8, uses and
 miscellaneous
 (bump ***contact*** fabrication by sputtering of, in
 integrated circuit fabrication)
 IT 7440-21-3, uses and miscellaneous
 (bump ***contact*** ***formation*** on integrated
 circuits from)
 IT ***7429-90-5*** , uses and miscellaneous
 (elec. ***contacts*** , sputtering of ***contact*** bumps
 on)
 IT 7647-01-0, uses and miscellaneous 7705-08-0, uses and
 miscellaneous
 (integrated circuit bump ***contact*** fabrication by etching
 with)
 IT ***7631-86-9*** , uses and miscellaneous
 (integrated circuits with layers of, bump ***contact***
 formation in)
 L10 ANSWER 10 OF 13 COPYRIGHT 1993 ACS
 AN CA93(2):17502h
 TI Current-conducting behavior of laminar dielectrics of hydrocarbon
 resins and inorganic oxide layers
 AU Lasswitz, Guenter
 CS Sekt. Elektrotech., Wiss. Mitarbeiter
 LO Ger. Dem. Rep.
 SO Wiss. Z. - Tech. Hochsch. Ilmenau, 26(2), 157-76
 SC 76-2 (Electric Phenomena)
 SX 35
 DT J
 CC WZTHAP
 IS 0043-6917
 PY 1980
 LA Ger
 AB The cond. of hydrocarbon resin layer sandwiches with or without
 Al2O3 or SiO intermediate layers was studied. The resin is a
 butadiene-styrene copolymer. The resins were ***coated*** on Al
 substrates, Al2O3 or SiO was ***deposited*** , and a new resin
 layer was laid down. Ag ***contacts*** were used in the cond.
 detn. The cond. is affected by the amt. of polymn. catalyst (dicumyl
 peroxide) and the curing temp. Large catalyst amts. reduce the cond.
 activation energy. The cond. increases as the field strength
 increases. A Poole-Frenkel mechanism appears to be operating.
 Photocond . occurs at <250 nm. An oxide ***barrier*** was
 obsd. to .1torsim.105 V/cm.
 KW cond butadiene styrene polymer laminate; ***photocond***
 butadiene styrene polymer; silicon oxide butadiene styrene cond;
 alumina butadiene styrene cond; optical absorption butadiene styrene
 polymer
 IT Potential ***barrier***
 (from oxide intermediate layers in butadiene-styrene copolymer

films)

IT Electric conductivity and conduction
 Photoconductivity and ***Photoconduction***
 (of butadiene-styrene polymer layers with alumina or silicon
 monoxide intermediate films)

IT 9223-55-8
 (elec. and ***photocond*** . of layers of, with intermediate
 oxide layers)

IT 82-43-3
 (elec. cond. of butadiene-styrene copolymer initiated by
 catalysts of)

IT ***7429-92-5*** , properties
 (elec. transport properties of butadiene-styrene copolymer films
 on)

IT 1344-28-1, properties ***10097-28-6***
 (elec. transport properties of butadiene-styrene copolymer films
 with intermediate layers of)

IT 105-76-0
 (polymn. of butadiene with styrene by)

L10 ANSWER 11 OF 13 COPYRIGHT 1993 ACS
 AN CA82(10):67153p
 TI Use of the internal ***photoemission*** method to study
 metal-dielectric-semiconductor structures with a ***plasma***
 -grown silicon dioxide film

AU Kalnina, R.; Feltns, I.; Eglitis, I.; Eimanis, I.
 CS Fiz.-Energ. Inst.
 LO Riga, USSR
 SO Latv. PSR Zinat. Akad. Vestis, Fiz. Teh. Zinat. Ser., (5), 113-16
 SC 76-13 (Electric Phenomena)
 DT J
 CO LZFTA6
 PY 1974
 LA Russ
 AB The ***photoelec*** . current $IF = f(h\nu)$, quantum yield Y , and
 the potential ***barrier*** height E , of MDS
 (metal-dielec.-semiconductor) structures, with the SiO_2 layer prepd.
 by decompn. of $Si(OEt)_4$ in an Ar-O high-frequency discharge, were
 measured successfully by the title method, at $h\nu = 3.5-5.5$ eV.
 The quantum yield Y varies. $(h\nu)^2$; $E = 4.1 \pm 0.1$ and 3.2 ± 0.1
 eV, for the Si- SiO_2 and Al- SiO_2 boundaries, resp. A
 barrier with $E = 3.9 \pm 0.1$ eV was obsd., indicating that
 an Al_2O_3 layer has ***formed*** between the SiO_2 layer and the
 electrode . These E values do not differ from those of MDS
 structures with the SiO_2 layer prepd. by thermal decompn. of
 $Si(OEt)_4$. Kinetic properties of the MDS structures studied were also
 very similar to those of MDS structures with SiO_2 obtained by a
 thermal process in H_2O vapor.

KW metal dielec semiconductor property; ***photoemission*** metal
 dielec semiconductor; ***plasma*** grown silica layer

IT ***Photoelectric*** emission
 (from metal-dielec.-semiconductor structure contg. silica)

IT Potential ***barrier***
 (in metal-dielec.-semiconductor structures contg. silica)

IT 1344-28-1, properties ***7429-92-5*** , properties 7440-21-3,
 properties
 (***photoelec*** . emission and potential ***barrier***
 height in metal-dielec.-semiconductor structures contg. silica
 and)

IT ***7631-86-9*** , properties
 (***photoelec*** . emission and potential ***barrier***
 height of metal-dielec.-semiconductor structures contg.)

L10 ANSWER 12 OF 13 COPYRIGHT 1993 ACS
 AN CA74(12):58568k
 TI Alloying semiconductor metals in the presence of reactive substances

AU Blank, Joseph M.; McGraw-Hill, Jan. 1.
CS International Business Machines Corp.
SO Fr. Demande, 12 p.
PI FR 2014594 17 Apr 1970
PRAI US 15 Jul 1968

IC H01L
SC 71 (Electric Phenomena)
DT P
CO FR00BL
PY 1970
LA Fr
AB Al ***contacts*** ***formed*** on a SiO2- ***coated*** Si semiconductor substrate may react with SiO2 during the alloying step, contaminating the ***contact***. A ***barrier*** film is used to prevent this. A layer of a pos. ***photoresist*** (Eastman Kodak KMER or KFTR) is applied over the SiO2 and then the bulk of this layer is eliminated by heat and solvent. The residue of the ***photoresist*** serves as the ***barrier*** film.
KW aluminum ***contacts*** passivation silicon; ***contacts*** aluminum passivation silicon; passivation aluminum ***contacts*** silicon; silicon aluminum ***contacts*** passivation; ***photoresist*** residues ***contacts*** passivation
IT Semiconductors, electric
(aluminum ***contact*** ***formation*** on silica- ***coated***, ***photoresist*** materials in contamination prevention during)
IT Electric ***contacts***
(aluminum, contamination prevention during attachment of, to semiconductors)
IT Resists
(on elec. semiconductors during aluminum ***contact*** ***formation***, for prevention of contamination)
IT ***7631-86-9***, uses and miscellaneous
(***coatings***, on semiconductors, contamination prevention during aluminum ***contact*** ***formation*** near)
IT 7440-21-3, uses and miscellaneous
(elec. ***contacts*** to, contamination prevention during ***formation*** of aluminum)
IT ***7429-90-5***, uses and miscellaneous
(elec. ***contacts***, to semiconductors, contamination prevention during attachment of)

L10 ANSWER 13 OF 13 COPYRIGHT 1993 ACS

AN CA72(22):116045j

TI Metal etching process for semiconductor devices

AU Deens, Henry C.; Jones, Robert Paul; Levin, Bernard B.

CS Radio Corp. of America

SO S. African, 13 pp.

PI ZA 6902122 3 Oct 1969

PRAI US 28 Mar 1968

SC 71 (Electric Phenomena)

DT P

CO SFX0AB

PY 1969

LA Unavailable

AB The manuf. of semiconductor devices having an ***elec*** interconnection pattern in the ***form*** of a shaped metallic layer is described, ***espec*** the techniques for etching the metallic layer to provide the desired pattern. In the manuf. ***of*** a Si planar epitaxial diode, a p-region ***is*** ***diffused*** into an n-type Si layer which has been grown on an n+ substrate. A suitable dopant is used to provide ***an*** n+-type ***contact*** region in the n- -layer. Thermally grown SiO2 ***layers*** are ***photoetched*** to ***uncover*** surface areas of the p-region and the n+ inset region. An Al film is evaed. over the entire upper wafer surface. An addnl. SiO2 layer is

pyrolytically ***deposited*** on the Al layer. A ***coating*** of ***photopolymerizable*** material is ***deposited*** on the exposed SiO₂ protective layer and selected portions are polymd. by ***uv*** radiation. The exposed ***coating*** is immersed in a developer to remove a portion overlying the SiO₂ layer. The polymd. layer is used as an etching mask to ***form*** a hole in the SiO₂ layer by means of a ***buffered*** HF etch. The wafer is removed from the etchant, washed, and immersed in an etching soln. comprising a mixt. of HNO₃ and HOPCl. This removes a portion of the metal layer exposed by the hole, but has no effect on the SiO₂ layer. The SiO₂ layer, which serves as an etch mask, adheres well to the metal layer, so that undercutting is almost completely eliminated. Portions of the Al layer in ***contact*** with the exposed surface of the p-region and n+ contact region are alloyed to the wafer surface to provide good ohmic contact by heating to 530-550.degree. for 16 min. A fresh SiO₂ film is pyrolytically deposited on the entire upper wafer surface. A fresh photoresist coating is applied, exposed, and developed to serve as an etch mask for providing apertures in the SiO₂ layers so that suitable electrodes can be provided in the apertures. After providing apertures, the remaining photoresist is removed. Terminal leads may then be ultrasonically bonded to the Al pads exposed by the apertures.

KW etching semiconductor devices; semiconductor devices etching;
connection patterns semiconductor devices
IT Electric circuits
(integrated, aluminum pattern ***formation*** for, silica
masking in)
IT Etching
(of aluminum patterns for integrated circuits, silica masking in)
IT ***7429-90-5*** , uses and miscellaneous
(elec. circuit patterns, silica mask in etching of)
IT ***7531-86-9*** , uses and miscellaneous
(etching mask, in aluminum pattern ***formation*** for
integrated circuits)

=> file reg

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FULL ESTIMATED COST	73.00	85.08
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DICTIONARY FILE UPDATES: 6 SEP 93 HIGHEST RN 149817-95-8

=> s hydrofluoric acid/cn
L11 1 HYDROFLUORIC ACID/CN

=> file ca

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	3.26	88.34
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-4.94

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FILE 'REGISTRY' ENTERED AT 02:06:16 ON 07 SEP 93

L1 1 S ALUMINUM/CN
L2 4 S SILICON OXIDE/CN OR SILICON DIOXIDE/CN OR SILICON MONOX

FILE 'CA' ENTERED AT 02:06:49 ON 07 SEP 93

L3 6552 S L1 AND L2
L4 0 S (CVD OR DEPOSIT? OR COAT? OR FORM?)/BI,AB(10W)L2
L5 3677 S L3 AND (1965-1985)/PY
L6 2400 S L5 AND (CVD OR DEPOSIT? OR COAT? OR FORM? OR CHEMICAL?)
L7 661 S L6 AND (PLASMA? OR PHOTO? OR LIGHT? OR UV OR ULTRAVIOLE
L8 275 S L7 AND (WIR? OR LEAD? OR CONTACT? OR ELECTROD?)/BI,AB
L9 34 S L7 AND (BARRIER? OR BUFFER?)/BI,AB
L10 13 S L8 AND L9

FILE 'REGISTRY' ENTERED AT 02:20:18 ON 07 SEP 93

L11 1 S HYDROFLUORIC ACID/CN

FILE 'CA' ENTERED AT 02:20:33 ON 07 SEP 93

=>

s 19 not (111 or 110)

16765 L11

L12 20 L9 NOT (L11 OR L10)

=>

d all 1-20

L12 ANSWER 1 OF 20 COPYRIGHT 1993 ACS
AN CA106(16):129952y
TI Semiconductor/insulator films for corrosion protection
AU Jain, F. C.
CS Dep. Elec. Eng. Comput. Sci., Connecticut Univ.
LO Storrs, CT, USA
SO Report, NADC-86028-60; Order No. AD-A169119/5/GAR, 52 pp. Avail.
NTIS
From: Gov. Rep. Announce. Index (U. S.) 1986, 86(21), Abstr. No.
646,997
SC 76-2 (Electric Phenomena)
SX 72
DT T
PY 1985
LA Eng
AB Al surfaces exhibit significantly improved corrosion protection when they are ***coated*** with suitable semiconductor/insulator thin films. These ***coatings***, generally realized in Metal-Semiconductor (MS) or MIS structural configurations, give rise to an interfacial elec. field which acts as an effective built-in electronic ***barrier***. This active ***barrier*** significantly impedes the transfer of electrons from the Al surface to foreign species which cause oxidn. by accepting the electrons. Anodic polarization data on numerous samples fabricated in both MS (e.g. Al/In Sn oxide (ITO)) and MIS (e.g. Al/SiO2/ITO configurations) have demonstrated the protective nature of the built-in active electronic ***barrier***. In particular the authors have obsd. a rest potential of -1.126 V (1% NaCl, 2 pH soln.) for Al/SiO2/ITO samples in polarization tests. The electronic ***barrier*** heights increase with (1) the presence of a thin (20-100 .ANG.) SiO2 layer at the metal-semiconductor interface; and (2) the energy gap of ITO which depends upon the In content. A comparison of these results with data obtained on ***plasma*** - ***deposited*** Al/Si3N4 samples is also presented.
KW aluminum corrosion semiconductor insulator; silica film corrosion aluminum; indium tin oxide corrosion
IT Semiconductor materials
(film couples of, with insulators, for corrosion protection)
IT Electric insulators and Dielectrics
(film couples of, with semiconductors, for corrosion protection)
IT Corrosion
(semiconductor/insulator films for protection against)
IT 50926-11-2, Indium tin oxide

aluminum corrosion protection by film couples of, with silicon dioxide)

IT ***7429-90-5*** , Aluminum, properties
(corrosion of, semiconductor/insulator films for protection against)

IT ***7631-80-9*** , Silicon dioxide, properties
(corrosion protection by film couples of, with indium tin oxide)

L12 ANSWER 2 OF 20 COPYRIGHT 1983 ACS

AN CA104(23)226032q

TI Laminates

AU Hirohawa, Atsushi

CE Toyo Ink Mfg. Co., Ltd.

LD Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

FI JP 60244540 A2 4 Dec 1985 Showa

AI JP 84-08571 18 May 1984

IC ICM B32B015-08
ICS B32B009-00; B32B017-10

SC 38-3 (Plastics Fabrication and Uses)

SX 17, 63

DT P

CO JKNDAF

PY 1985

LA Japan

AB Laminates for packaging or containers for foods or medicines with excellent transparency, hygiene, and gas ***barrier*** are prep'd. by dry plating a plastic film or sheet with a metal, its oxide, and/or glass, optionally low-temp. ***plasma*** -treating, and hot-melt extrusion-laminating with sapon'd. ethylene-vinyl acetate copolymer (I). Thus, a 100-.mu. unoriented poly(ethylene terephthalate) sheet was vacuum-aluminized to a thickness of 100 .ANG., extrusion-laminated with Eval EPF 101 (sapon'd. I) to a thickness of 150 .mu., and drawn 9:1 in both directions to give a laminate with adhesive strength 1.5 kg/cm, O permeation 0.1 mL/m2-24 h-25.degree., and excellent transparency.

KW sapon'd ethylene vinyl acetate copolymer; polyethylene terephthalate sheet laminate container; packaging polyethylene terephthalate sheet laminate; aluminized polyethylene terephthalate sheet laminate

IT Polyamides, uses and miscellaneous
(films, sputtering of titanium on, for packaging or containers for foods or medicines)

IT Containers
Packaging materials
(polyamide or polyester films or sheet laminates with metal or metal oxide or glass and with sapon'd. ethylene-vinyl acetate copolymer as, for food or medicines)

IT Glass, oxide
(vacuum- ***deposition*** of, on poly(ethylene terephthalate) sheets, for packaging or containers for foods or medicines)

IT 90015-73-9
(films, laminates with poly(ethylene terephthalate) film and sapon'd. ethylene-vinyl acetate copolymer, for packaging or containers for foods or medicines)

IT 25067-34-9
(poly(ethylene terephthalate) sheet laminates, for packaging or containers for foods or medicines)

IT 25038-59-0, uses and miscellaneous
(sheets, laminates with metal, metal oxide or glass and with sapon'd. ethylene-vinyl acetate copolymer, for packaging or containers for foods or medicines)

IT 1309-48-4, uses and miscellaneous 1332-29-2 1332-37-2, uses and miscellaneous 1344-28-1, uses and miscellaneous ***7429-90-5*** , uses and miscellaneous 7440-32-6, uses and miscellaneous ***7631-80-9*** uses and miscellaneous 63-67-7, uses and miscellaneous

7313699 (1965-1985)/PY

L9 14 L8 AND (1965-1985)/PY

=> prt fu 14

'PRT' IS NOT A RECOGNIZED COMMAND

The previous command name entered was not recognized by the system.

For a list of commands available to you in the current file, enter

"HELP COMMANDS" at an arrow prompt (=>).

=> d all 1-14

L9 ANSWER 1 OF 14 COPYRIGHT 1993 ACS

AN CA107(16):146131t

TI Behavior of carbon during plasmochemical synthesis of finely divided
ultrapure oxides

AU Ivanov, M. Ya.; Kupryashkina, T. N.; Polak, L. S.; Aloyan, S. G.;
Ovsyannikov, N. A.; Ryabenko, E. A.; Efremov, A. A.

LO USSR

SO Sint. Soedin. Plazme Soderzh. Uglevodorodny, 141-55. Edited by:
Polak, L. S. Akad. Nauk SSSR, Inst. Neftekhim. Sint.: Moscow, USSR.

SC 78-2 (Inorganic Chemicals and Reactions)

SX 76

DT C

CO 55TLAO

PY 1985

LA Russ

AB The ***plasma*** method was studied for the prepn. of
highly-dispersed ultrapure oxides; the main features were
established for the thermal decompn. of metalloorg. compd. used for
prepg. the oxides. The optimum conditions for the plasmochem. prepn.
are discussed from the point of view of contamination of the oxides
by C-contg. products. The method was applied to the prepn. of MO₂ (M
= Ti, Si, Ge) from M(OEt)₄ or B₂O₃ from B(OEt)₃.

KW oxide ultrapure dispersed prepn. ***plasma***; silica prepn
plasma; boron oxide prepn. ***plasma***; titania prepn
plasma; germanium oxide prepn. ***plasma***; carbon compd
contamination oxide prepn

IT ***Plasma***, chemical and physical effects
(in thermal decompn. of metallo-org. compds. in prepn. of
ultrapure highly-dispersed oxides)

IT Oxides, preparation
(prepn. of ultrapure highly-dispersed, by ***plasma***
decompn. of alkoxides)

IT 74-84-QP, Ethane, preparation 74-85-1P, Ethene, preparation
74-86-2P, Acetylene, preparation ***C30-08-QP***, Carbon
monoxide, preparation 7440-44-2P, Carbon, preparation
(formation of in ***plasma*** decompn. of alkoxides in

AN CA102015M:128967w
 TI Ellipsometric analysis of the transition area of silicon-silicon dioxide
 AU Benere, R.; Kalnina, R.; Felina, I.; Freidman, I.; Eglitis, I.; Eimandis, I.
 LG USSR
 SO Ellipsom.: Metod Issled. Poverkhn., IRub. Mchastnikov Vses. Konf., 2nd, Meeting Date 1981, 58-61. Edited by: Rukhanov, A. V. Izd. Nauka, Sib. Otd. Novosibirsk, USSR.
 SC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
 SX 78
 DT C
 CO 52VSA3
 PY 1983
 LA Russ
 AB Ellipsometry of the Si-SiO₂ interface formed by oxidn. of Si by dry O₂ at 1050 and 1200 degrees. showed that, on the Si side, an approx. 0.5 nm thick layer with an increased n with respect to a bulk Si is formed. Simultaneously, a layer with the thickness of approx. 0.5 nm can be formed on the oxide side. The latter layer is characterized by higher n value compared to that of SiO₂. The exptl. data were interpreted in terms of a single-layer model of the Si-SiO₂ interface. The oxide layers prep'd by the ***plasma*** and thermal decompn. of SiOEt₄ were also studied.
 KW oxida-thermal silicon oxygen ellipsometry; silicon dioxide silicon interface ellipsometry
 IT Oxidation
 (of silicon, ellipsometry of silicon-silicon dioxide interface in relation to)
 IT Interface
 (silicon-silicon dioxide, ellipsometry of)
 IT ***78-10-4***
 (decompn. of, in formation of silicon dioxide layers on silicon, ellipsometry in study of)
 IT 7440-21-3, properties
 (ellipsometry of interface with silicon dioxide, in silicon oxidn. study)
 IT ***7631-86-9***, reactions
 (ellipsometry of interface with silicon, in silicon oxidn. study)
 IT 7782-44-7, reactions
 (oxidn. of silicon in atm. of, ellipsometry of silicon-silicon dioxide interface in relation to)
 L9 ANSWER 7 OF 14 COPYRIGHT 1993 ACS
 AN CA98(26):225925d
 TI Annealing of electronic states in ***plasma***-grown silicon dioxide
 AU Bekeris, J.; Kalnina, R.; Felina, O.; Freiberga, L.
 CS Fiz. Energ. Inst.
 LO Riga, USSR
 SO Latv. PSR Zinat. Akad. Vestis, Fiz. Teh. Zinat. Ser., (2), 43-7
 SC 76-1 (Electric Phenomena)
 SX 65, 75
 DT J
 CO LZFTA6
 IS 0002-323X
 PY 1983
 LA Russ
 AB The annealing was studied of defect trapping states in SiO₂ films formed by ***plasma*** decompn. of SiEt₄ on Si supports. At 400-500.degree., the d. of surface states decreases; annealing at 700-950.degree. decreases the gap states. Possible structural models for the defects are described.
 KW trap defect silica film annealing; surface state silica film annealing; gap state silica film annealing
 IT Energy level, surface
 (of silica films deposited from ***plasma*** decompn. of tetraethoxysilane, annealing of)
 IT Trapping and Traps
 (of silica films from ***plasma*** deposition, effect of annealing on)
 IT ***78-10-4***
 (annealing of trapping states and silica films from ***plasma*** decompn. of)
 IT ***7631-86-9***, properties
 (annealing of trapping states in films of, from ***plasma*** decompn. of tetraethoxysilane)
 IT 7440-21-3, properties
 (annealing of trapping states of silica films deposited on)

LG ANSWER 9 OF 14 COPYRIGHT 1983 ACC
 AN CA95(10):100201,
 TI Producing microstructures on solids.
 AU Fritzsche, Christian.
 CS Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung e.V.
 LG Fed. Rep. Ger.
 SC Ser. Offen., T. pp.
 FI DE 3015004 A1 20 Oct 1981
 AI DE 80 3015004 18 Apr 1982
 IC B01J019-09; B02PC 22; H01L021 007
 SC 74-12 (Radiation Chemistry, Photochem. Int., and Photographic and Other Reprographic Processes)
 SX 75
 DT F
 CO GWXXBX
 PY 1981
 LA Ger
 AB A process for the prodn. of microstructures on solids is described in which the exposure and coating process are done together to give coated areas resistant to subsequent ***plasma*** etching. Thus, a SiO₂-coated Si wafer was imaged in a scanning electron microscope in the presence of 1,2,5-trichlorobenzene to give in the exposed areas an org. layer (C₂H₃) which was resisted to etching by a CF₄ ***plasma***.
 KW microstructure electron beam recording
 IT Photoimaging compositions and processes
 (in microstructure prodn. on solid materials)
 IT Recording
 (electron-beam, ***plasma*** etching-resistant microstructure prodn. on solids by)
 IT Etching
 (sputter, in microstructure prodn. on solid materials)
 IT ***78-10-4*** 91-20-3, uses and miscellaneous 32-52-4, uses and miscellaneous 106-99-0, uses and miscellaneous 126-99-0D, derivs. 108-88-3, uses and miscellaneous 108-88-7, uses and miscellaneous 287-92-3 542 32 7, uses and miscellaneous 542-92-7D, derivs. 1313-27-5, uses and miscellaneous 1333-41-1 7782-44-7, uses and miscellaneous 23140 60-3
 (electron-beam recording in presence of, for ***plasma*** etching-resistant microstructure prodn.)
 IT 108-70-3
 (electron-beam recording in presence of, for ***plasma*** etching-resistant microstructure prodn. on solids)
 IT 7440-21-3, uses and miscellaneous
 (microstructure prodn. on silicon fluoride-coated, ***plasma*** etching-resistant, electron-beam recording in prodn. of)
 IT 75-73-0
 (***plasma***, etching by, in microstructure prodn. on solid materials)
 IT ***7631-86-9***, uses and miscellaneous
 (silicon coated with, microstructure prodn. on, ***plasma*** etching-resistant, electron beam recording in)

LG ANSWER 10 OF 14 COPYRIGHT 1983 ACC
 AN CA93(6):592270
 TI Deposition and characterization of thin silicon oxide (SiO₂) films
 AU Priestley, E. B.; Call, P. J.
 CS RCA Lab.
 LG Princeton, NJ 08540, USA
 SC Thin Solid Films, 69(1), 39-52
 SC 76-4 (Electric Phenomena)
 DT J
 CO THSFAP
 IS 0040-6090
 PY 1980
 LA Eng
 AB Thin (<500 ÅNG.) homogeneous SiO₂/1.5 < n < 2.0 films prep'd. from the glow discharge reaction of SiH₄ or a SiH₄ deriv. with an oxidant such as N₂O or O show considerable protection as dielectric layers. The chem. compn. and properties of these films are relatively insensitive to glow-discharge geometry, the gas compn., and power. Oxidant-rich ***plasma*** minis. provide denser films and thus greater protection against atm. attack on the underlying material. The films were characterized by using IR spectroscopy, Auger depth profile anal., transmission electron microscopy, SEM, multiple drop liq. contact angle measurements, and ellipsometry.
 KW silicon oxide discharge deposition, ***plasma*** de, silicon oxide; silane discharge silicon oxide deposition; film deposition silicon oxide
 IT ***11126-22 0***
 (film deposition of, from glow discharge reaction of silane or silicon oxide with oxidant)

FILE 'HOME' ENTERED AT 00:00:00 ON 07 SEP 00

FILE 'REGISTRY' ENTERED AT 00:00:44 ON 07 SEP 00

L1 4 S SILICON OXIDE/CH OR SILICON DIOXIDE/CH OR SILICON MONOX
L2 1 S OXYGEN/CH
L3 8 S CARBON DIOXIDE/CH OR CARBON MONOXIDE/CH OR NITROGEN DIO

FILE 'GA' ENTERED AT 00:41:25 ON 07 SEP 00

L4 000001 S (PLASMA, OR MICROWAV. OR ECR#)BI,AD
L5 7001 S L4 AND (L1 OR L2) AND L4
L6 10776 S L4/NOOAT? OR DEPOSIT? OR EVD# OR FORM#BI,AD

FILE 'REGISTRY' ENTERED AT 00:40:10 ON 07 SEP 00

L7 1 S TEO2/CH

FILE 'GA' ENTERED AT 00:40:20 ON 07 SEP 00

L8 100 S L5 AND L7
L9 14 S L8 AND (0001 1000/CH)

L0

5 L8 447 4322/PY

432065 1986/PY

L10 5 L8 AND 1986/PY

all 1-5

L10 ANSWER 1 OF 5 COPYRIGHT 1986 ACC

AN CA106(18):1506073

TI Fully Cured sol-gel thin films on polycarbonate substrates

AU Wielonski, R.; Drauglis, E.

CO Battelle Columbus Labs.

LG USA

EP Proc. Annu. Tech. Conf. - Soc. Vac. Coaters, 1986, 25: 21

EC 28-3 (Plastics Fabrication and Uses)

BT J

CO ATCCDI

IC 0731-1993

PY 1986

LA Eng

AB SiO₂ sol was prepd. by mixing TEOS with EtOH and frequently mixing the combined soln. with a soln. of EtOH and water. Conc'd. HNO₃ was added and the mixt. was allowed to ag. overnight. Application of the sol-gel coating on polycarbonate was achieved by using a semiconductor wafer spin coater. Following a short air cured period, the coated substrates were inserted into the vacuum chamber for ***plasma*** curing.

EW During sol gel coating polycarbonate, ***plasma*** curing sol gel film

IT ***Plasma***, chemical and physical effects (curing by, of silicon dioxide coatings prepd. by sol-gel process on polycarbonates)

IT Polycarbonates, uses and miscellaneous (silicon dioxide sol-gel coatings on, low temp. ***plasma*** curing of)

IT Crosslinking (***plasma***, of silicon dioxide coatings prepd. by sol-gel process on polycarbonates)

IT ***7631-96-9P***, Silicon Dioxide, uses and miscellaneous (coatings, prepd. by sol-gel process, low temp. ***plasma*** cured, on polycarbonates)

IT ***78-10-4***, Tetraethoxysilane (silicon dioxide sol prepd. from, as coatings on polycarbonates by low-temp. curing sol-gel process)

IT 24930-00-3, uses and miscellaneous (silicon dioxide sol gel coatings on, low temp. ***plasma*** curing of)

AN TAI60412H:01103:
 TI Experimental application of poly(vinyl alcohol) and silica
 artificial vessels
 AU Tamura, K.; Minano, H.; Okada, H.; Nakai, H.; Waki, S.; Teraoka,
 T.; Shimizu, Y.; Hino, T.
 CO Chest Dis. Res. Inst., Kyoto Univ.
 LC Kyoto 606, Japan
 SO Biomater., Med. Devices, Artif. Organs, Volume 1981, 1982, 19,
 133-52
 CC 63-7 (Pharmaceuticals)
 DT J
 CC BMDCAI
 IC 0090-5488
 PY 1986
 LA Eng
 AB A poly(vinyl alc.) (9232 89-5) silica (7831 01-01 PVA-SiO2)
 composite and heparinized PVA-SiO2 were examined in vitro and in vivo
 as materials to coat artificial vessels to be used for the
 replacement of small arteries. PVA-SiO2 prolonged coagulation time
 and no blood coagulation was noticed on heparinized PVA-SiO2
 surfaces after 2 days using the Lee-White and APTT plasma**
 recalcification methods. After placing noncoated and coated surfaces
 in contact with blood components in vitro and in vivo, the degree of
 blood component adhesion was greater in noncoated woven Dacron than
 in PVA-SiO2 coated Dacron. The degree of adhesion was even less in
 heparinized PVA-SiO2 coated Dacron. Furthermore, artificial vessels
 made of these 2 types of materials were used to replace parts of the
 canine abdominal aorta and were removed 1 1/2 yr later. Patency
 rates were as follows: noncoated 2/7, PVA-SiO2 coated 1/7,
 heparinized PVA-SiO2-coated 2/12. The inner surface of these
 prostheses were obsd. with light microscopy and SEM. Intima
 formation was thinner on the PVA-SiO2 composite surfaces than on the
 control surfaces. Heparin acted as a local anti-thrombotic and
 PVA-SiO2 limited intima formation. Thus, PVA-SiO2 composite coated
 surfaces can be effective for small artery replacement for its good
 tissue affinity and anticoagulant.
 KW poly(vinyl alc) silica prosthetic coating, vessel, artificial poly(vinyl
 alc) silica
 IT Blood platelet
 IT Fibrin
 IT (adhesion of, on poly(vinyl alc) silica surfaces, prosthetic
 coatings in relation to)
 IT Polyester fibers, biological studies
 IT (for artificial blood vessel, poly(vinyl alc) silica composite
 coating of)
 IT Coating materials
 IT (poly(vinyl alc)-silica, for vascular prosthesis)
 IT Blood vessel
 IT (artificial, coatings for, poly(vinyl alc)-silica and)
 IT Adhesion
 IT (bio-, of blood components, on poly(vinyl alc) silica surfaces,
 prosthetic coatings in relation to)
 IT Prosthetic materials and Prosthesis
 IT (vascular, coatings for, poly(vinyl alc)-silica for)
 IT ***7831-05-0***, biological studies
 IT (composites contg. poly(vinyl alc) and, as coatings for
 artificial blood vessel, blood compatibility of)
 IT 9002-89-5, Poly(vinyl alcohol)
 IT (composites contg. silica and, as coatings for artificial blood
 vessel, biocompatibility of)
 IT 1343-98-2
 IT (crosslinking between poly(vinyl alc) and, for coating
 artificial blood vessel, biocompatibility, of)
 IT ***7812-4***, Tetracycline
 IT No areas of poly(vinyl alc) silica composites

KW ethoxyallane
 IT ***78-10-4***
 (***plasma*** oxidn. of, in fine powd. sil.)
 IT ***7631-86-8P***, preparation
 (prepn. of fine powd., tetraethoxyallane, in)

LIT ANSWER 5 OF 5 COPYRIGHT 1988 ACS
 AN CA104(26)227195g
 TI Fine pulverulent silicon dioxide
 AU Trofimukh, V. N.; Ivanov, M. V.; Pashchenko, V. I.; Gribanov, T. N.; Gribanov, B. M.; Ryabchenko, E. A.; Chelomov, E. T.
 LO USSR
 SC U.S.S.R. FROM: Otkrytiye, Izvest. 1986, (10), 227.
 PI SU 543248 A1 15 Mar 1986
 AI SU 75 2106292 10 Feb 1975
 IC ICM C01B033-12
 SC 40-8 (Industrial Inorganic Chemicals)
 DT F
 CO URXMAF
 PY 1986
 LA Russ
 AB SiO2 is prepd. by oxidn. of Si compd. in CO or CO2 envs. low-temp. ***plasma***. To improve the degree of purity, an alkoxy deriv. of Si (e.g., tetraethoxyallane), in addn. to the Si-compd. compd., and the process is carried out in a high frequency ***plasma*** (1500-3000 MHz).
 KW silicon dioxide fine powder prepn.
 IT ***78-10-4***
 (oxidn. of, in low-temp. ***plasma***, in prepn. of finely powd. silica)
 IT ***7631-86-8P***, preparation
 (prepn. of, finely powd., in low temp. ***plasma***

** log y

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FULL ESTIMATED COST	26.70	22.22
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	7.22	7.22

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TYMNET: Call cleared by request

please log in:

- AN - 411/290
- ABN - B9208-2550F-005
- TI - Improved sub-micron inter-metal dielectric gap-filling using TEOS/Ozone APCVD (IN Microelectron. Manuf. Technol. (USA))
- AU - Korczynski, E.J.; Shih, A.H.
- OS - Watkins-Johnson Co., Scotts Valley, CA, USA
- SO - Microelectron. Manuf. Technol. (USA), vol.15, no.1, pp.22-7, Jan. 1992, 5 REF.
- JC - MMATE7
- DT - J (JOURNAL PAPER)
- NU - ISSN 01617427
- CC - *B2550F; B2550E; B2830E; B0520F; B0170E; B2570
- TC - PR (PRACTICAL); EX (EXPERIMENTAL)
- IT - chemical vapour deposition; insulating thin films; integrated circuit manufacture; metallisation
- ST - TEOS precursor; planarization; sub-micron; inter-metal dielectric; APCVD; fine-gap filling; 0/sub 3/ precursor; SiO/sub 2/ film deposition
- MF - 03/el 0/el; SiO2/int 02/int Si/int 0/int SiO2/bin 02/bin Si/bin 0/bin
- AB - Silicon dioxide (SiO/sub 2/) films deposited from TEOS and ozone precursors at atmospheric pressure have been shown to produce the fine-gap filling and excellent local planarization that is critical for sub-half-micrometer intermetal device layers. The inherent advantages of Atmospheric Pressure Chemical Vapor Deposition (APCVD) and a continuous processing system architecture combine to produce high quality Inter-Metal Di-electric (IMD) oxide layers with high throughput. The authors show such a flexible process system that is capable of APCVD oxide depositions from both hydride and liquid source chemistries. Undoped SiO/sub 2/ and BPSG flow-glass processes have been developed with both chemistry sets. An optimized process chamber design and water transport sub-system result in the lowest cost-per-wafer of any IMD

JC - ASUSEE
 CN - 0169-4332/92/ \$05.00
 DT - PA (CONFERENCE PAPER)
 NU - ISSN 01694332
 CC - *A8115H; A7865J; A7830G
 TC - EX (EXPERIMENTAL)
 IT - chemical vapour deposition; CVD coatings; Fourier transform spectra;
 infrared spectra of inorganic solids; laser beam applications; silicon
 compounds
 ST - Fourier transform infrared spectra; ArF laser induced CVD; precursor
 gases; parallel; perpendicular irradiation configuration;
 tetramethylsilane; hexamethyldisilane; diethylsilane; tetraethoxysilane;
 process temperatures; laser repetition frequency; insulating quality;
 laser circuit restructuring technology; 200 to 400 degC; SiO/sub 2/
 films; ArF laser induced deposition; N/sub 2/O; SiH/sub 4/
 MF - SiO2/bin O2/bin Si/bin O/bin; ArF/bin Ar/bin F/bin; N2O/bin N2/bin N/bin
 O/bin; SiH4/bin H4/bin Si/bin H/bin
 NM - temperature K=E02*4.73 to K=E02*6.73
 AB - The ArF laser induced deposition of SiO/sub 2/ layers has been examined
 using a variety of different precursor gases in a parallel and (or)
 perpendicular irradiation configuration. The films deposited at
 temperatures lower than 400 degrees C from the vapor phase of liquid
 precursors like tetramethylsilane (TMS), hexamethyldisilane,
 diethylsilane (DES) and tetraethoxysilane (TEOS) together with N/sub 2/O
 or O/sub 2/ as oxidizers always reveal Si-O-C and Si-OH vibrations in the
 FT-IR absorption spectra. Only for TEOS and T>or=400 degrees C do these
 peaks disappear. The best results at the lowest process temperatures are
 obtained using SiH/sub 4/ and N/sub 2/O. Deposition rates are in the
 range of 80 nm/min at 200 Hz laser repetition frequency and at T>or=200
 degrees C SiO/sub 2/ films are obtained which exhibit an excellent
 insulating quality. This allows them to be employed for example in a
 laser circuit restructuring technology for devices.

ICS 0250030-00; H01L021-90
SC 76-3 (Electric Phenomena)
SX 35, 75
DT P
CO GWXXAW
PY 1991
LA Ger
AB The title methods, which are particularly useful in forming isolation films for integrated circuits, entail:
photoinduced polymn. of a gaseous SiO-contg. org. compd. along with an O2-contg. and/or a N2O-contg. gas to form a gaseous polysiloxane; forming a polysiloxane film on a substrate by condensation of the gaseous polysiloxane; converting the polysiloxane film into a silicate film; and converting the silicate film into a H2O-free SiO2 film by reacting the (chem. bound) H2O in the silicate film with SiH4 in a SiH4 atm.
KW silica film formation polysiloxane precursor; water free silica film formation
IT Silicates, preparation
(prepn. and dehydration of, in water-free silica film formation)
IT Siloxanes and Silicones, preparation
(prepn. and reaction of, in water-free silica film formation)
IT Electric circuits
(integrated, water-free silicon dioxide films for isolation of)
IT ***78-10-4***, Tetraethylorthosilicate
(polymn. of, ***photoinduced***, in water-free silica film prepn.)
IT ***7631-86-9P***, Silica, preparation
(prepn. of water-free films of)
IT ***7782-44-7***, Oxygen, reactions 7803-62-5, Silane, reactions 10024-97-2, Nitrogen oxide (N2O), reactions
(reaction of, in water-free silica film prepn.)

SO Jpn. Kokai Tokkyo Koho, 4 pp.
 PI JP 04188622 A2 7 Jul 1992 Heisei
 AI JP 90-311619 19 Nov 1990
 IC ICM H01L021-31
 ICS H01L021-316
 SC 76-3 (Electric Phenomena)
 DT P
 CO JKXXAF
 PY 1992
 LA Japan
 AB In forming an oxide film on a semiconductor device by a
 normal-pressure CVD method during the manuf. of a semiconductor
 device, a TEOS + O₃ process gas is supplied to the substrate while
 irradiating the substrate with ***light***. The method is useful
 for forming a high-purity SiO₂ film. An app. for carrying out the
 above method is also described.
 KW ***photochem*** CVD oxide semiconductor device
 IT Semiconductor devices
 (CVD of oxide films in manuf. of)
 IT Vapor deposition processes
 (***photochem*** ., of oxide films, in manuf. of semiconductor
 devices)
 IT ***7631-86-9*** , Silica, uses

 IT (***photochem*** . CVD of, in manuf. of semiconductor devices)
 78-10-4 , Tetraethoxysilane ***10028-15-6*** , Ozone, uses
 (process gases contg., for ***photochem*** . CVD of oxide
 films in manuf. of semiconductor devices)

AI JP 89-2/455 8 Feb 1989
IC ICM H01L021-302
ICS C23F004-00; H01L021-205
SC 76-14 (Electric Phenomena)
DT P
CO JKXXAF
PY 1990
LA Japan

AB The process of applying excited mols., radicals, and/or ions (e.g.,
in ***plasma*** ***deposition*** , etching, or doping) to
circuit substrates is enhanced by irradiating with IR radiation at a
selected wavelength. App. for carrying out the process includes a
source of $>2.5 \mu\text{m}$ ***light*** .
KW ***plasma*** etching enhancement IR irradiation; ***deposition***
plasma enhancement IR irradiation; doping ***plasma***
enhancement IR irradiation; circuit board ***plasma*** etching
IT Infrared radiation, chemical and physical effects
(enhancement of ***plasma*** -assisted processes by)
IT Films
(***plasma*** ***deposition*** of, IR irradiation. enhancement
of)
IT Sputtering
(etching, IR irradiation. enhancement of)
IT Electric circuits
(printed, boards, ***plasma*** etching, IR irradiation.
enhancement of)
IT Etching
(sputter, IR irradiation. enhancement of)
IT 19287-45-7, Diborane
(dopant source, excitation of, IR irradiation. for)

and Al-based layer, and carrying out selective ***CVD*** to substitute the Si layer with a high-m.p. metal layer. Alternatively, the method involves forming a 1st Si oxide layer on an Al-based interconnection layer of a substrate by ***plasma*** ***CVD*** using $(\text{EtO})_4\text{Si} + \text{O}_2$, forming a 2nd Si oxide layer by ***CVD*** using $(\text{EtO})_4\text{Si} + \text{O}_3$; etching back the 2nd layer to obtain a planar surface, and forming a ***plasma*** ***CVD*** Si nitride layer. A device having a reliable interconnection and a good passivation is obtained.

KW interconnection passivation semiconductor device

IT Semiconductor devices

(connection formation and passivation of)

IT Vapor ***deposition*** processes

(interconnection formation and passivation by, in manuf. of semiconductor devices)

IT Passivation

(of semiconductor devices, with silicon oxide and nitride films)

IT ***78-10-4***, Tetraethoxysilane ***7782-44-7***, Oxygen, uses

10028-15-6, Ozone, uses

(***CVD*** of silicon oxide using, in passivation of semiconductor devices)

IT 7440-21-3, Silicon, uses

(amorphous films, in formation of interconnections of semiconductor devices)

IT 7429-90-5P, Aluminum, uses

(elec. interconnections, formation and passivation of, in manuf. for semiconductor devices)

IT ***7631-86-9***, Silicon oxide, uses 12033-89-5, Silicon nitride, uses

(passivation of semiconductor devices with)

IT 7440-33-7, Tungsten, uses

(selective ***CVD*** of. in manuf. of semiconductor devices)

AU - Fujita, T.; Yano, K.; Tanimura, S.; Ueda, T.
 OS - Matsushita Electric Ind. Co. Ltd., Osaka, Japan; IEEE
 SO - IEEE, New York, USA, 484 PP., PP. 285-91, 1987, 7 REF.
 CN - CH2488-5/87/0000-0285 \$01.00
 DT - PA (CONFERENCE PAPER)
 CC - *B2570C; B2550E; B0520F
 TC - PR (PRACTICAL); EX (EXPERIMENTAL)
 IT - chemical vapour deposition; dielectric thin films; integrated circuit
 technology; photochemistry; silicon compounds; VLSI
 ST - spin-on-glass multilayers; photo CVD technology; planarized interlevel
 dielectrics; submicrometer VLSIs; submicrometer gap filling; metal lines;
 reactant gases; growth temperatures; step coverage; conformal deposition;
 planarization; SiO/sub 2/ films; N/sub 2/O; SiH/sub 4/; N/sub 2/O-SiH/sub
 4/
 MF - N2OSiH4/ss H4/ss N2/ss Si/ss H/ss N/ss O/ss; SiO2/int O2/int Si/int O/int
 SiO2/bin O2/bin Si/bin O/bin; N2O/bin N2/bin N/bin O/bin; SiH4/bin H4/bin
 Si/bin H/bin
 AB - A photo CVD technology which realizes planarized interlevel dielectrics
 in submicrometer VLSIs is described. This technology comprises
 submicrometer gap filling with SiO/sub 2/ films between metal lines.
 Photo CVD process conditions such as reactant gases and growth
 temperatures have been investigated to improve step coverage of
 interlevel dielectrics as compared with plasma-enhanced CVD (PECVD). The
 photo CVD by N/sub 2/O and SiH/sub 4/ mixture gases has realized
 conformal deposition above the temperature of 300 degrees C, as a result
 submicrometer gaps were buried with SiO/sub 2/ films. A novel
 planarization process has been carried out to fill submicrometer gaps and
 round off steps using the photo CVD and spin-on-glass (SOG) multilayers.
 Gaps of 0.6- μ m (aspect ratio 1.33) have been successfully refilled
 with the insulator films regardless of the tapered angle and sidewall
 morphology of metal lines.

USA, 7-9 Dec. 1981}

AU - Peters, J.W.
OS - Technol. Support Div., Hughes Aircraft Co., Culver City, CA, USA; IEEE
SO - IEEE, New York, USA, 711 PP., PP.240-3, 1981, 4 REF.
DT - PA (CONFERENCE PAPER)

CC - *A8115H; *B2550E; B0520F; B2810; B2830E
TC - EX (EXPERIMENTAL)
IT - chemical vapour deposition; dielectric thin films; oxidation;
semiconductor technology; silicon compounds
ST - low temperature process; semiconductor device manufacture; SiO/sub 2/
deposition; refractive index 1.46; pinhole free dielectric; Photo-CVD;
photochemical vapor deposition; oxide dielectrics; low pressure Photo-CVD
oxide process; selective absorption of photonic energy; PHOTOX process;
step coverage; uniform surface morphology
AB - Describes a low temperature (50-300 degrees C) process for the
photochemical vapor deposition (Photo-CVD) of a variety of oxide
dielectrics. The low pressure Photo-CVD oxide process (PHOTOX) relies
solely on the selective absorption of photonic energy for initiation in
contrast to thermal and plasma excitation techniques commonly employed in
the industry today. The PHOTOX silicon dioxide (i.e. SiO/sub 2/ formed by
the PHOTOX process) dielectric deposited at 200 degrees C with a
refractive index of 1.46 is stoichiometric SiO/sub 2/ with a breakdown
strength of 6.0×10^6 V/cm. The PHOTOX process provides exceptional
step coverage and is capable of producing virtually pinhole-free
(< 2 cm/²) dielectrics with uniform surface morphology. The
electrical interface associated with the PHOTOX SiO/sub 2/ has been
examined on a number of elemental and compound semiconductors including
silicon and indium phosphide which reveal distinct advantages of the

-7- (INSC) *

AN - B82019451

TI - CVD silicon oxide below 100 degrees C utilizing photochemical combustion of SiH/sub 4/ and O/sub 2/ (IN 1981 Symposium on VLSI Technology. Digest of Technical Papers, Maui, HI, USA, 9-11 Sept. 1981)

AU - Sarkozy, R.F.

OS - Carlsbad Res. Center, Hughes Aircraft Co., Carlsbad, CA, USA

SO - IEEE, New York, USA, 95 PP., PP.68-9, 1981, 6 REF.

DT - PA (CONFERENCE PAPER)

CC - *B0520F; B2570

TC - AP (APPLICATIONS); EX (EXPERIMENTAL)

IT - CVD coatings; insulating thin films; integrated circuit technology; silicon compounds

ST - CVD SiO/sub 2/ layers; low temperature processing techniques; photochemical combustion; SiH/sub 4/; O/sub 2/

AB - The trend toward smaller geometries and shallower junctions in semiconductor devices has initiated substantial effort toward the development of low temperature processing techniques. In the case of deposited SiO/sub 2/ layers, methods are currently available for depositions below 400 degrees C, such as sputtering, sublimation, ion plating and plasma assisted chemical vapour deposition. However, these techniques require sophisticated equipment that is expensive, difficult to maintain and a source of radiation damage. As an alternative approach, equipment has been constructed for the chemical vapour deposition of silicon oxide utilizing photochemical combustion of SiH/sub 4/ and O/sub 2/ at temperatures below 100 degrees C.

(2- (WPAT) 1. - ? Ref ?
AN - 87-279138/40
XRAM- C87-118517
XRPX- N87-209070
TI - Low pressure CVD of layers contg. silicon and oxygen - is more reliable
using a liquid source of tetra-ethyl-or thio-silicate
DC - E36 L03 U11 R46
AW - CHEMICAL VAPOUR DEPOSIT
PA - (IBMC) IBM DEUTSCHLAND
IN - BIRO L, MALIN K, SCHMID O
NP - 5
PN - EP-239664-A 87.10.07 (8740)
J62238628-A 87.10.19 (8747) {JP}
US4849259-A 89.07.18 (8936)
EP-239664-B 91.12.18 (9151)
DE3683039-G 92.01.30 (9206)
LA - G; E
DS - DE FR GB DE FR GB
CT - (G)US3158505 US3934060 FR2332338 FR1385677 GB1165575 DE1646004 GB2132230
2.Jnl.Ref (E)DE1646004 FR1385677 FR2332338 GB1165575 GB2132230 US3158505
US3934060 2.Jnl.Ref
PR - 86.04.04 86EP-104596
AP - 86.04.04 86EP-104596 87.02.06 87JP-024892 87.03.19 87US-027986
86.04.04 86EP-104596
TC - 86.04.04 86EP-104596

is provided apart from the substrate, the reaction temp. is maintained at <500.degree., and a film having a mask pattern is grown under ***UV*** irradiation with supply of an org. silane compd. and O₂. Thus, O₂, (EtO)₄Si at 80.degree., and N₂ carrier gas were supplied at 600, 600, and 800/ cm³/min, resp. A SiO₂ film was grown at 400.degree. and 1000 .ANG./min with irradiation from a Hg lamp. The film had good step coverage and no particle inclusions. Irradiation through a mask formed a patterned film.

KW ***photochem*** vapor deposition app ***UV*** irradiation; silica film deposition; phosphosilicate glass film deposition

IT ***Photolysis***
(in deposition of silica films)

IT Glass, oxide
(phosphosilicates, ***photochem*** . vapor deposition of films of)

IT Films
(***photochem*** . vapor deposition of, app. for, with ***UV*** irradiation.)

IT ***7782-44-7*** , uses and miscellaneous
(in ***photochem*** . vapor deposition of films)

IT ***78-10-4***
(***photochem*** . vapor deposition of films of silica from)

IT ***7631-86-9*** , uses and miscellaneous
(***photochem*** . vapor deposition of films of, from org. silane compds.)

(film deposition assisted by)

IT ***7631-86-9*** , uses and miscellaneous
(films, deposition of, adsorption-accelerating agent for)

IT ***78-10-4*** ***7782-44-7*** , uses and miscellaneous
7782-50-5, uses and miscellaneous 104181-69-3
(in silica film deposition)

CO JKXXAF
PY 1986
LA Japan

(
N2O
NO
N2O)

AB SiO₂, Si₃N₄, or Si_xO_yN_z films are prepd. using a vapor-phase process which consists of introducing org. silane and N₂O, NO₂, NO, CO₂, CO, and/or NH₃ into vessels at .ltoreq.500.degree. and irradiating with ***UV*** to excite the reactive gases. Thus, Si(OEt)₄ 170, N₂O 600, and N₂ 1500 mL/min were introduced into a vessel at 80.degree., irradiated with a Hg lamp (wavelength 184.9 nm, 254.0 nm), and heated at 400.degree. to obtain 1000 .ANG./min SiO₂ film.

KW silica film vapor phase prepn; nitride silicon film vapor prepn; oxynitride silicon film vapor prepn

IT Ceramic materials and wares
(films, vapor-phase prepn. of, from inorg. silanes)

IT ***Ultraviolet*** radiation, chemical and physical effects
(irradn. by, of gaseous mixts., ceramic film prepn. by)

IT Coating process
(vapor-phase, with ceramics)

IT ***7631-86-9P*** , preparation 11105-01-4P 12033-89-5P,
preparation
(films, vapor-phase prepn. of, from org. silanes)

IT ***78-10-4***
(irradn. of, by ***UV*** radiation, with carbon- and nitrogen-contg. gases, ceramic film prepn. by)

IT ***124-38-9*** , uses and miscellaneous ***630-08-0*** , uses and miscellaneous 7664-41-7, uses and miscellaneous 10024-97-2, uses and miscellaneous 10102-43-9, uses and miscellaneous ***10102-44-0*** , uses and miscellaneous
(irradn. of, by ***UV*** radiation, with org. silane, ceramic

LB ANSWER 4 OF 14 COPYRIGHT 1983 ACS

AN CA102/001060251

TI Charge properties of silicon dioxide films prepared in a high-frequency discharge in tetraethoxysilane under various deposition conditions and of the silicon-silicon dioxide interface

AU Bekker, I.; Mikulson, A.; Peltins, I.; Freiberga, L.

CS Fiz.-Energ. Inst.

LC Riga, USSR

SO Latv. SSR Zinat. Akad. Vestis, Fiz. Teh. Zinat. Ser., (1), 51-5

TC 76-2 (Electric Phys.)

EX 75

DT J

CO LZFTAG

IS 0000-000X

PY 1985

LA Russ

AB Study of the growth rate of SiO₂ films and the contact p.d., d. of surface states, flat band voltage, and dielec. strength of the Si-SiO₂ system as functions of current, voltage, and the pressures of (EtO)₄Si and O₂ showed that the charge parameters of ***plasma*** grown SiO₂ films are not detd. entirely by the growth rate.

KW charge parameter ***plasma*** grown silica; contact potential silica silicon; interface state silica silicon; energy level silica silicon interface; flat band voltage silica silicon; dielec strength silica silicon; ethoxy silane oxygen ***plasma*** silica deposition.

IT Electric charge
(in silica films prepd. from tetraethoxysilane-oxygen discharge, deposition conditions in relation to)

IT Dielectric strength
(of silica films deposited on silicon from tetraethoxysilane-oxygen discharge)

IT Electric potential
(contact, of silica films on silicon, elec.-discharge deposition conditions in relation to)

IT Energy level, band structure
(d. of states, at silica-silicon interface, elec.-discharge conditions in relation to)

IT ***7631-86-8P***, properties
(elec. charge properties of films of, prepd. from tetraethoxysilane oxygen discharge)

IT 7442-21-3, properties
(elec. properties of silica interface with, effect of discharge deposition conditions of)

IT ***78-12-4***
(silica film deposition from discharge from oxygen in, elec. properties of silica-silicon system in relation to conditions of)

IT 7782-44 7, properties
(silica film deposited from discharge in tetraethoxysilane and, elec. properties and silica-silicon system in relation to)

LC ANSWER 11 OF 11 URGENT 1000 AGC
 AN CA93020400070500
 TI Investigation of thin Si dioxide layers deposited by ***plasma***
 decomposition of ethoxy silane in a planar reactor
 AU Hristov, H. I., Deringer, G. G., Cernov, E. V., Aleksandrova, G. P.
 CC Inst. Solid State Phys.,
 LG Sofia, Bulg.
 SC Phys. Status Solidi A, 49(2), 609-14
 SC 75-1 (Crystallization and Crystal Structure)
 SN 76
 DT 7
 CC PSCABA
 IC 0001-0005
 PY 1979
 LA Eng
 AB SiO2 layers on Si substrates are obtained in a planar reactor by
 decompn. of SiOEt4 in an O2 ***plasma***. The layers deposited
 at substrate temp. of 300.degree. show some porosity,
 hygroscopicity, increased etching rate, and water incorporation, so
 that MOS structures that use such layers have unstable
 capacitance-voltage curves and high d. of interface states. These
 characteristics can substantially be improved after annealing at
 400.degree. in H2. The etching rate decreases but reaches a value
 that is characteristic of thermal SiO2 only after high-temp.
 annealing.
 KW silica ***plasma*** deposition silicon; ethoxy silane decompn
 silica; capacitance-voltage silica MOS; interface state density
 silica MOS; etching
 IT Electric capacitance
 (of MOS structures, contg. silica, from ***plasma***
 deposition)
 IT Electric capacitance
 (of MOS structures with ***plasma*** deposited silica layers)
 IT Etching
 (of silica layers from ***plasma*** decompn. of
 tetraethoxysilane)
 IT Energy level, surface
 (interface, d. of states, of silica layers from ***plasma***
 deposition in tetraethoxysilane)
 IT ***78 10 4***
 (deposition of silica films from ***plasma*** decompn. of)
 IT 7449-21-0, misc and miscellaneous
 (deposition of silica films on, from ***plasma*** decompn. of
 tetraethoxysilane in presence of oxygen)
 IT 1333 74-2, misc and miscellaneous
 (etching rate of MOS structures, contg. silica films annealed
 in H2)
 IT 7782-44-7, misc and miscellaneous
 (deposition of silica films from ***plasma*** contg.
 tetraethoxysilane)
 IT ***7531-65 5***, misc and miscellaneous
 (deposition of, from ***plasma*** with

LP ANSWER 2 OF 14 URGENT 1990 AGC

AM CAC71204220201

TI ***Plasma*** enhanced chemically vapor deposited silicon dioxide for metal/oxide semiconductor structures on indium antimonide

AU Mackens, W; Kahl, W

CO Inst. Ang. Phys., Univ. Wuerzburg

LC Hertzberg 2020/201, 5th Dep. Ser.

CO Thilo, Ralf Ralf, 070, 00 01

CC 70 0 (Silicon Dioxide)

DT J

CC THSTAF

IC 3040-6090

PY 1990

LA Eng

AB SiO₂ gate insulators were prepd. at near room temp. on InSb by ***plasma*** enhanced chem. vapor deposition from tetraethoxysilane in an O₂ ***plasma***. The films are characterized by ellipsometry and IR Fourier spectroscopy. The predominant chem. component is SiO₂, with some impurities, such as hydrocarbon groups and water. The objective was the prepn. of high-quality gate oxides for MOS studies. The MOS performance of the films is demonstrated with capacitance-voltage curves, breakdown field strengths, and film resistivity measurements. Inversion carrier mobilities on n-type InSb of up to 70,000 cm²-V⁻¹-s⁻¹ at liq.-He temp. were achieved.

KW silica chem. vapor deposition; ***plasma*** silica film deposition; indium antimonide MOS structure; capacitance voltage indium antimonide MOS; breakdown elec. indium antimonide MOS; resistance films chem. vapor deposition; carrier mobility silica film

IT Infrared spectra

(Fourier, of silicon dioxide films prepd. by ***plasma*** enhanced chem. vapor deposition)

IT Semiconductor devices

(MOS, on indium antimonide, ***plasma*** enhanced chem. vapor deposition of silicon dioxide films for)

IT Optical absorption

Optical reflection

(by silicon dioxide films prepd. by ***plasma*** enhanced chem. vapor deposition)

IT Electric breakdown

(in silicon dioxide films formed by ***plasma*** enhanced chem. vapor deposition)

IT Electric current carriers

(mobility of, in MOS structures on indium antimonide, contg. ***plasma*** enhanced chem. vapor deposited silicon dioxide)

IT Electric resistance

(of silicon dioxide films formed by ***plasma*** enhanced chem. vapor deposition)

IT Electric capacitance

(potential relations with, of ***plasma*** enhanced chem. vapor deposited silicon dioxide films)

IT ***70-10-4***

(in ***plasma*** enhanced chem. vapor deposition of silicon dioxide in MOS structures on indium antimonide)

IT 1010-61-2, properties

(***plasma*** enhanced chem. vapor deposition of silicon dioxide for MOS structures on)

IT ***7001-00 0***, properties

(***plasma*** enhanced chem. vapor deposition of, for MOS)

SC 76-2 (Electrical Phenomena)
DT J
CO PTTTDE
IS 2258-4177
PY 1985
LA EN
AB

SiO₂ films were grown from tetraethoxysilane onto InP by ***plasma*** enhanced chem.-vapor deposition (CVD). The influence of InP surface treatment on the properties was investigated. The properties of the SiO₂ films, capacitance-voltage (C-V) characteristics of an InP MIS structure, as well as hysteresis and capacitance variation with measuring frequency were measured and analyzed. By using this method, better SiO₂ films and SiO₂-InP interfaces can be obtained.

KW silica chem vapor deposition; ***plasma*** enhanced chem vapor deposition; indium phosphide silica deposition; capacitance indium phosphide silica MIS

IT Semiconductor devices

(indium phosphide MIS, contg. silicon dioxide films grown by ***plasma*** enhanced chem. vapor deposition)

IT Electric capacitance

(potential relations with, of indium phosphide MIS structures contg. silicon dioxide grown by ***plasma*** enhanced chem. vapor deposition)

IT ***7631-85-9***, uses and miscellaneous

(films, ***plasma*** enhanced chem. vapor deposition of, on indium phosphide)

IT ***78-10-4***

(in ***plasma*** enhanced chem. vapor deposition of silicon dioxide films on indium phosphide)

IT 22398-80-7, properties

(***plasma*** enhanced chem. vapor deposition of silicon dioxide films on indium phosphide)

The rate of deposition was studied as a function of time, total pressure, nature of background gas, partial pressure of $(\text{EtO})_4\text{Si}$, substrate temp, and substrate position. With Ar as background gas or with no background gas, electron impact with the $(\text{EtO})_4\text{Si}$ mol. in the vapor phase is the dominant factor leading to its decompn. With O background gas, the interaction of the $(\text{EtO})_4\text{Si}$ vapor and O atoms is the main factor in the reaction mechanism in an O ***plasma***, monocryst. SiO_2 films are formed, but in an Ar ***plasma*** or in the absence of any background gas, organosilicon polymer films are formed. Both solid and polymer films were transparent, smooth, free from pinholes, and strongly adherent to metals and nonmetals. The ir spectra of the monocryst. SiO_2 deposited at high O to $(\text{EtO})_4\text{Si}$ vapor ratios are similar, but not identical, to the spectra of thermally grown SiO_2 films. The compn of the SiO_2 films becomes O deficient when deposition is carried out under low O to vapor ratios at 10^{-4} to 10^{-5} torr. The nature of the hydroxyl groups present in the films deposited at low substrate temps. was investigated by ir spect.scopy.

KW glow discharge through ethoxysilane, organosilicon polymer film deposition; silica film deposition

IT Silanes and SiH_4 and silanes and miscellaneous

(films, deposition from decompn. of tetraethoxysilane in glow discharge)

IT Electric discharge, chemical and physical effects

(in film deposition, from decompn. of tetraethoxysilane)

IT ***72-12-4***

(deposition of, in glow discharge in film deposition)

IT 7702 44 7, silanes and miscellaneous

(film deposition in presence of, by decompn. of tetraethoxysilane)

IT ***7503100 070*** silanes and miscellaneous

(films, deposition from decompn. of tetraethoxysilane in glow discharge)

CC LEFTAG
IS 0002-003X
PY 1985
LA Russ

AB Film and interface properties (charge and interface state densities, dielec. strength) were investigated for different high-frequency annealing conditions. The operating power was monitored through changes in high frequency voltage or current. The effectiveness of high-frequency annealing in the case of ***plasma*** SiO₂ films depended also on the partial pressure of O₂ in the process chamber.

KW annealing discharge grown silica film; charge elec silica film annealed; interface state silica silicon annealed; dielec strength silica silicon annealed; energy level silica silicon annealed

IT Dielectric strength
(of silica films deposited from tetraethoxysilane-oxygen discharge, effects of annealing on)

IT Energy level, surface
(d. of states, at interface of silicon with silica prepd. from elec. discharge in tetraethoxysilane-oxygen)

IT ***7621-86-9***, properties
(elec. properties of films of, grown in tetraethoxysilane-oxygen discharge, effect of annealing on)

IT 7440-21-2, properties
(elec. properties of interface of, with silica deposited from elec. discharge in tetraethoxysilane oxygen)

IT ***78 12 4***
(silica film deposition from high-frequency discharge in oxygen and, elec. properties in relation to conditions of)

IT 7782-44-7, properties
(silica film deposition from high frequency discharge in tetraethoxysilane and, elec. properties in relation to conditions

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